**USER'S MANUAL**

**ELEVATOR CONTROLLER**

**CJ1M PROCESSOR**
**1-2 SPEEDS AC**

**J12-1000 SERIES**
**CODE B44-07**

**J12-1000_A**
**VERSION 07-3.1**

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# SERVICE & ADJUSTMENT
## REDUCED TORQUE CONTROL
## SINGLE SPEED TWO SPEED

## ADJUSTMENT

IMPORTANT!

*MULTI-VOLTAGE CONTROLS MUST BE SET FOR CORRECT VAC BEFORE OPERATING CONTROL!*

## I. SINGLE SPEED ADJUSTMENT

**A.** Set the TIME adjustment at the maximum point and the INITIAL TORQUE adjustment at the minimum point. (This setting provides the softest start, but the initial torque may be too small to start the motor for the first few cycles.)

**B.** Set the INITIAL TORQUE adjustment first; usually 1/4 to 1/ 2 of a turn from the minimum torque setting is adequate.

**C.** Decrease the TIME adjustment if the starting is too soft under the half load condition.

## II. TWO SPEED ADJUSTMENT

**note: For E-Series substitute **HI** for Accel & **LO** for Decel.

**A.** Set the TIME adjustment at the maximum point and the ACCELERATION and DECELERATION INITIAL TORQUE adjustments at the minimum points. (This setting provides the softest start, but the initial torque may be too small to start the motor for the first few cycles.)

**B.** Set the ACCELERATION TORQUE adjustment first: usually 1/4 to 1/2 of a turn from the minimum torque setting is adequate.

**C.** Then set the DECELERATION TORQUE adjustment by turning it to the minimum torque setting. If the transition from high to low speed is too soft, increase the setting until an appropriate transition is obtained. Usually setting the DECELERATION TORQUE adjustment to minimum is the best setting.

## SERVICE

All readings should be taken with a standard analog type VOM (volt-ohm meter).

## III. SINGLE SPEED CONTROLS

**Step#1** - Disconnect motor from T1, T2 and T3.

**Step#2** - Set INITIAL TORQUE adjustment to minimum and the TIME adjustment to maximum.

**Step#3** - Energize the contactor - for proper operation the following readings should be taken (example is for a 460VAC, three phase system with 115 VAC control voltage standard).

**A.** From TL1 to TL2 ,TL2 to TL3 and TL1 to TL3 - 460VAC

**B.** Control signal point **A & B** terminals - 115 VAC. It is important that this reading be taken across the A & B screws on the logic box. If no voltage can be read across these two points then check for misplacement of an electrical interlock. The " common" side of the control signal is sensed through the coil which is NOT ENERGIZED, so do not interlock the common wire out of the circuit. Simply checking for 115 VAC from one screw terminal and the "common" ground wire is NOT sufficient. Without a proper signal to the A & B terminals (and the HI, LO and COMMON in a two-speed system), the output of the control at T1, T2, T3 will remain -0- VAC. "A,B" must only be hooked up to the coils NOT THE CONTROL TRANSFORMER!

**C.** After six seconds take readings at T1, T2 and T3 (with the motor disconnected).

**1.** From T1 to T2, T2 to T3 and T1 to T3 the voltage is approximately 80-95% of the line voltage. For the 460 VAC control the reading would be approximately 405 VAC.

**2.** A -0-VAC output will occur if the proper control signal is not received (see **III.B.**and **IV.A.,B.,C.**).

**D.** With the TORQUE adjustment at minimum and the TIME adjustment at maximum, read the meter across T1, T2 and T3 (as in "C1" above), from the instant the contactor is closed. The meter should move slowly during the first five seconds, then quickly for the last second. The total time to reach 88% of the line voltage should be approximately six to nine seconds. Each phase to phase test should be similiar in voltage profile, no matter where the TORQUE and TIME adjustments are set. Due to the dampening factor in all volt-ohm meters it is difficult to detect the exact voltage level that is associated with a particular torque setting. However, the varying of the TORQUE and TIME settings can be readily identified on the meter. **The important point is that all three voltage profiles are the same.**

**E.** When the SCR Bridge portion of the control is separate from the control box (two piece units - size "c" and larger) other readings can be taken.

**1.** A1 to B1, B1 to C1 and C1 to A1 - will give line voltage when the contactor is energized.

**2.** A2 to A3, B2 to B3 and C2 to C3 should read .5 to 1.0 volts D.C. after six seconds. A voltage profile similiar to the profile described in section "**III.D.**", should be seen after the contactor is switched from an open to a closed position.

## IV. TWO SPEED TORQUE CONTROLS

Steps #1,#2 and #3 are the same as they are for the single speed control in section " **III** .". The difference lies with the control signal circuitry. For proper operation check the following control signals across the screws on the box. See section" **III.B.**" for general testing procedure.

**A.** When in the contactor is energized for **low speed** operation the meter will read:

1. Between HI and COMMON..... -0- VAC
2. Between LO and COMMON..... 115 VAC
3. Between LO and HI..... 115 VAC
4. Between A and B..... 115 VAC

**B.** When the contactor is energized for **high speed** operation the meter will read:

1. Between LO and COMMON .....-0- VAC
2. Between HI and COMMON..... 115 VAC
3. Between HI and LO..... 115 VAC
4. Between A and B..... 115 VAC

**C.** If another control voltage is used it will appear instead of 115 VAC listed above.

## CIRCUIT BREAKERS/ FUSES

In heavy jogging applications, single or two-speed, the circuit breakers or fuses may repeatedly open. Increasing the TORQUE setting or decreasing the TIME setting will usually take care of this. Larger circuit breakers or fuses will also work.


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# NOTES AND PRECAUTIONS

- The controller must be installed by competent people who possess the suitable training and cards for the installation of elevator controllers;
- The controller's power supply must come from a fuse switch supplied by others. The fuses value must respect the electrical code;
- It is necessary to install a separate conductive element to ground the controller in the mechanical room. To know the size of the conductive element, check the electrical code. An indirect grounding (e.g. water pipes) may cause intermittent troubles and electrical noises may occur;
- Please note the controller comes with a one (1) year guarantee, effective on the day of billing. An improper use of the controller, an incorrect connection or the disregard of the user's manual may void the guarantee. Also note that only the components are guaranteed;
- In case of an incorrect connection, the controller is protected by TVS which can short-circuit. Verify the functioning and replace them if needed.
- Allow enough space between the resistor bank, located on top of the controller, and the machine room ceiling for the dynamic braking resistor may be from 4,000 to 30,000 watts (see drawings).

## Operating conditions:

- The 3 phases entry voltage may vary of more or less 10 %;
- A 60HZ frequency is standard, a 50HZ frequency is available on special order;
- The operating temperature is 0 to 45°C;
- The relative humidity is 95 %;
- Do not install the NEMA 1 standard enclosure in a dusty environment or where there is risk of water infiltration. Other types of enclosures are available upon request (NEMA 4, 12 etc.);
- Please contact Automatisation JRT Inc. if the motor is installed at 50 ft. or more from the controller;
- CSA approval.

## General information:

J12-1000 series controllers were developed for a quick and easy installation and operation. The controllers have functions of internal self-diagnosis, which allow an easy maintenance. There are also several functions that are programmable by the user.

***Thus, it is very important to read thoroughly the manual, for a quick and secure installation. Please note that this controller cannot operate without an encoder.***

There are two ways to program the controller options. The first option is the LCD screen installed inside the controller. It allows configuring the elevator but you cannot modify the plc's program if a sequence modification is required. The second option is the programming console (CQM1-PRO01-E or C200H-PRO27). This option allows programming of the plc if a sequence modification is required. The second option is not necessary for the elevator start-up.

**General features:**

- Number of floors: 64
- Maximum number of cars: 12

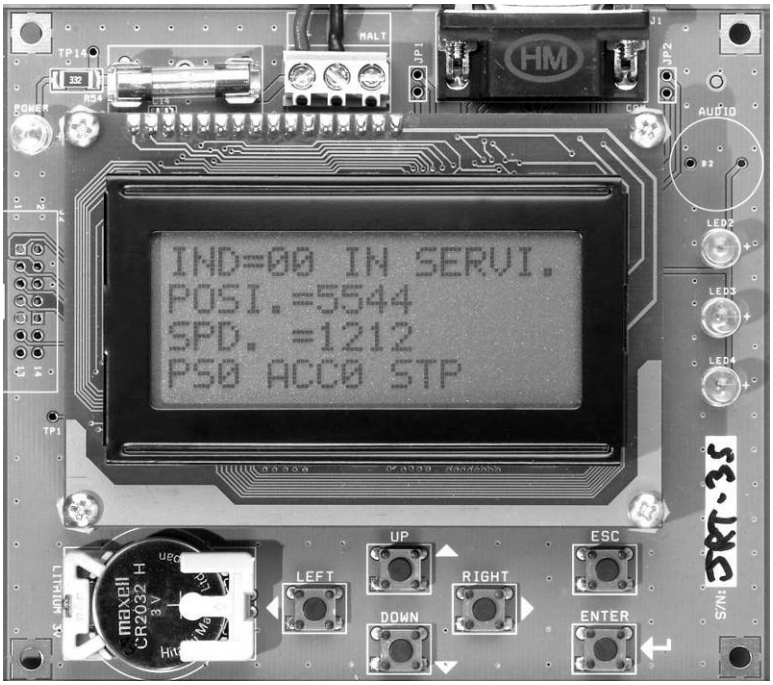
# 1. LCD USE (JRT-LCD):

***This section is a summary of the supervision utility. Refer to appendix C for a complete description.***

The LCD lets you visualize the state of the elevator controller (floor, speed in ft/min, perforated tape position, alarms, etc.), modify the plc's configuration registers and also to record car calls and hall calls from a distance. The utility offers the possibility to have the information displayed in French or English.

The utility is provided with different light-emitting diodes "LED". The "POWER" LED indicates that the utility is power supplied. The "LED2" blinks to indicate that the program is functioning normally. Though, if the "LED2" stays on or off at all times, the program is not in an operational, you must reset the power.

***When the elevator is in trouble, the screen of the "LCD" utility will blink to warn the user.***




## 1.1. KEYBOARD:

The "UP/DOWN" keys allow access to the main menus or sub-menus. They also allow changing the value of a parameter.

The "LEFT/RIGHT" keys allow placing the cursor on the parameter to modify.

The "ENTER" key allows access to a sub-menu. It also allows saving of a new value.

The "ESC" allows to return to the main menus or to cancel a parameter modification.

## 1.2. MENUS:

The "LCD" utility contains 19 menus available to the users.

| | | |
|---|---|---|
| 1- Monitoring; | 8- Encoder calibration; | 15- Language; |
| 2- Registres access; | 9- Upload DM PLC → LCD; | 16- Contrast; |
| 3- Alarms history; | 10- Download DM PLC → LCD; | 17- Create I/O table; |
| 4- Alarms buffer; | 11- Diagnosis I/O PLC; | 18- Password; |
| 5- Erase alarms; | 12- Enter call; | 19- About. |
| 6- Construction mode; | 13- Date-time; | |
| 7- Recording floor position; | 14- Statistics; | |

**To access a menu:**

- Press "ESC" to access to the menus list;
- Press on the "UP/DOWN" keys to select a menu;
- Press "ENTER" to access the menu.

***The "LCD" utility has a protection that locks the menus where it is possible to modify a value or a parameter. In order to access to these menus, the user must enter the password. See section "1.2.10 Password Menu" (The LCD is locked after three hours of inactivity).***

### 1.2.1. Monitoring Menu:

The "Monitoring" menu shows, in actual time, the elevator's status data. This information may be used during the temporary and final start-up. At a start-up or after 3 hours of keyboard inactivity, the following screen will appear:

**Displayed Information:**

- Floor where the elevator is located;
- Actual status of the elevator;
- Actual position of the perforated tape (only if the elevator has a perforated tape);
- Actual elevator speed (only if the elevator has a perforated tape);
- Speed, selected acceleration and direction (only if the controller is a traction type);

- Actual "Soft-Start" status (only if the controller is an hydraulic type).

### 1.2.2. Register Access Menu (to configure the elevator):

This menu allows reading and writing in one of the PLC's register. The "DM" registers are used to configure the elevator.

**Register type selection:**

- Press "UP/DOWN" keys to select the wanted register;
- Press "ENTER" to save;

  or

- Press "ESC" to go back to the previous menu.
- Register selection:
- DM, CH, HR and AR (for CJ1M PLC).

**Register number selection:**

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" keys to modify the number;
- Press "ENTER" to save and to go to the next menu;
- Press "ESC" to go back to the previous menu.

**Register Value:**

The register value is shown in hexadecimal and binary formats.

- Press "ENTER" to modify the selected register value.
- Press "ESC" to go back to the previous menu.

**Modifying the register value:**

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" to modify the number;
- Press "ENTER" to save and to go back to the previous menu and visualize de new value;
- Press "ESC" to return to the previous menu.

### 1.2.3. Alarms buffer Menu:

This menu allows visualising the different alarms in the elevator controller. The utility "LCD" displays "NO ALARM" when the elevator controller has no more alarms. Press on the "UP/DOWN" keys to scroll the alarms.

### 1.2.4. Erase Alarms Menu:

This menu allows erasing the alarms saved in the PLC and in the alarms historical of the "LCD" utility.

**To erase alarms:**

- Press "ENTER" to erase alarms;

  or

- Press "ESC" to return to the previous menu.

***If the alarm is still present, it will automatically show up again in the alarms list menu. Erasing an alarm through the "LCD" utility does not reset the alarm in the elevator controller.***

### 1.2.5. Recording floor position Menu:

This menu allows launching a function that registers floors when the controller uses a perforated tape or an encoder on the governor for the floor positioning. Refer to section 6.

***When the elevator controller is in a floor position registering cycle, the "LCD" utility displays what is in "DM483" where is says "IND=" on the screen and "LED4" blinks. It is impossible to know if the number of magnets, door zone(DZO), is the same than the number of floors.***

### 1.2.6. Construction mode Menu:

The Construction mode disables temporarily certain detections to facilitate the elevator car construction in Inspection mode. As soon as the elevator controller is placed in Automatic mode and that a call has been placed, the Construction mode will be deactivated automatically and all signals will be in function.

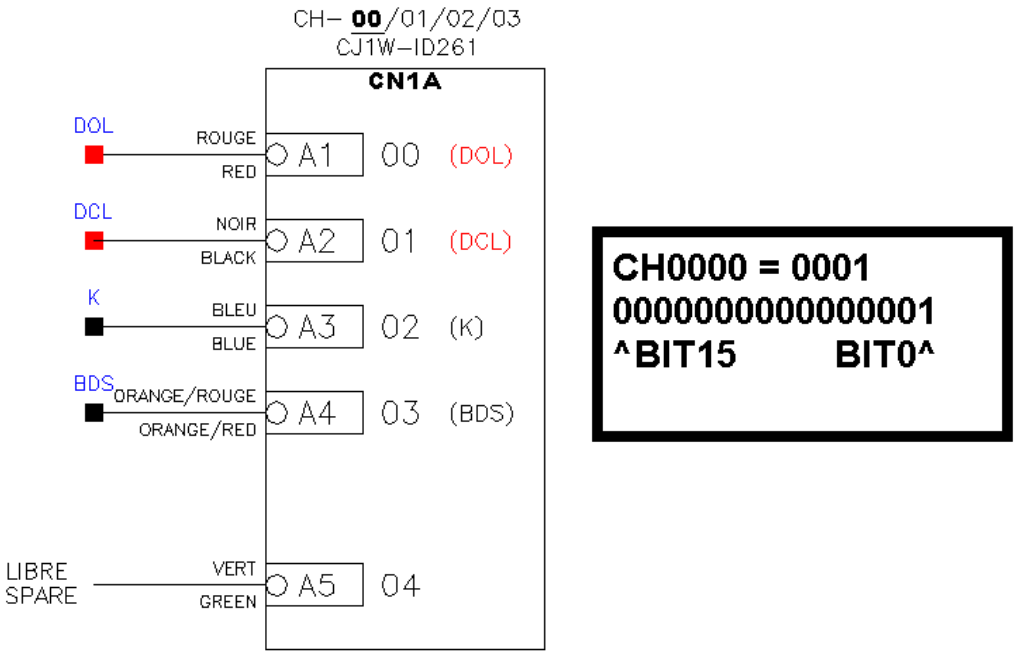
The elevator controller must be in Inspection mode.

- Press "ESC";
- Press the "UP/DOWN" keys up to "CONSTRUCTION";
- Press "UP" to activate the Construction mode;
- Press "ENTER" to confirm.

### 1.2.7. Diagnostic I/O PLC Menu:

It is possible to visualize the controller's inputs/outputs with the electrical drawings supplied with the controller. In the inputs/outputs pages, the "Channel CH" number is written above the module. If the module has more than one channel, the underlined one is the right one.

*Example:*



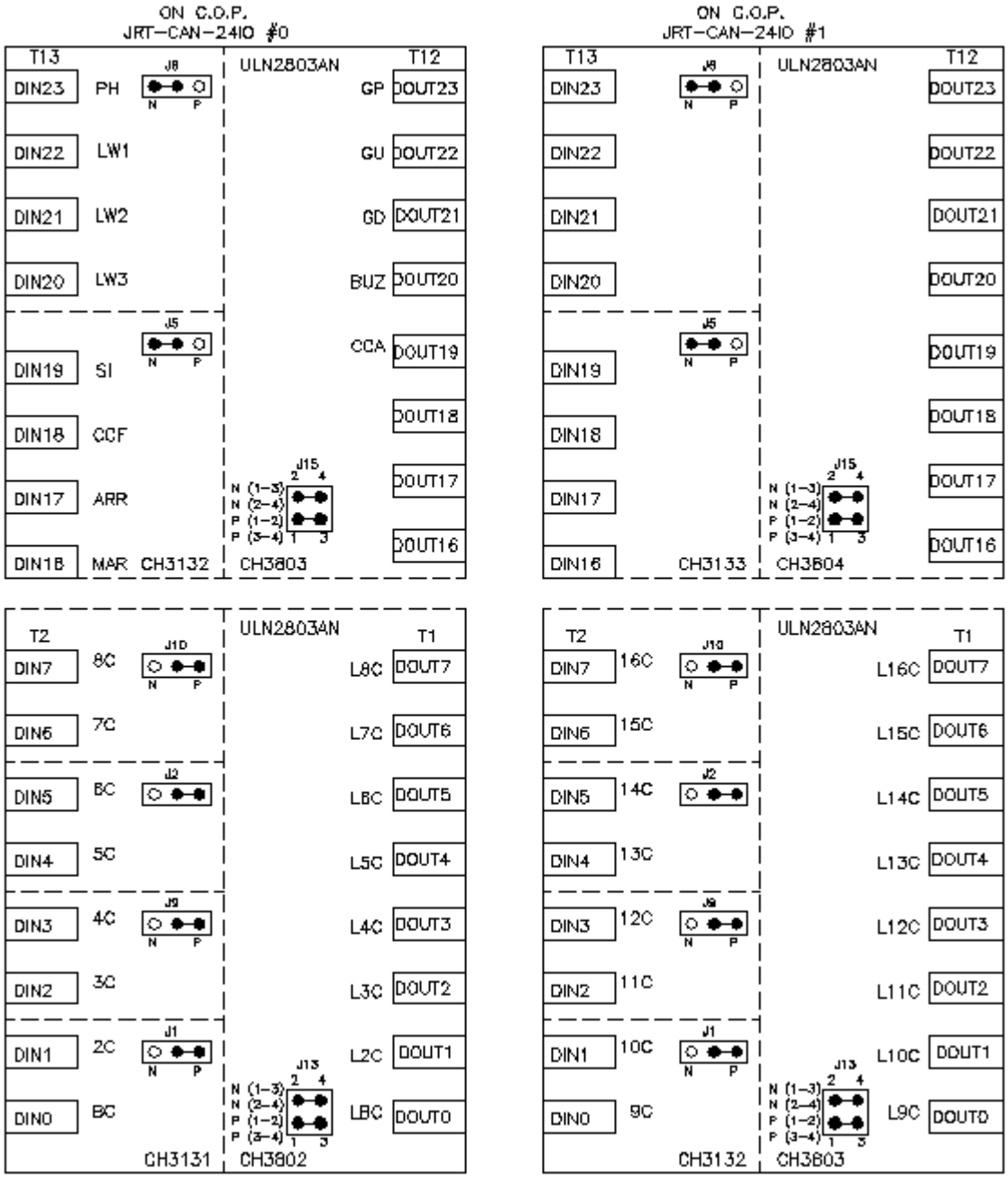

This example indicates that the "BIT 0" is activated. So the input "DOL" is activated.

**Selecting the register number:**

- Press "LEFT/RIGHT" to place the cursor on the number to modify;
- Press "UP/DOWN" to modify the number;
- Press "ENTER" to save and go to the next menu;
- Press "ESC" to go back to the previous menu.
- Press "UP/DOWN" to see what is in the following or previous "CH".

This diagnostic tool may also be used when you have the option "CanBus". The "Channel CH" number is on the drawing.

*Example of modules "JRT-CAN-24IO".*




A module "JRT-CAN-24IO" has 24 inputs and 24 outputs. A "CH" has 16 "BIT".

**Input:**

**CH 3131** bits 07-00 → JRT-CAN-24IO #0 (07-00)

**CH 3131** bits 15-08 → JRT-CAN-24IO #0 (15-08)

**CH 3132** bits 07-00 → JRT-CAN-24IO #0 (23-16)

**CH 3132** bits 15-08 → JRT-CAN-24IO #1 (07-00)

**CH 3133** bits 07-00 → JRT-CAN-24IO #1 (15-08)

**CH 3133** bits 15-08 → JRT-CAN-24IO #1 (23-16)

**Output:**

**CH 3802** bits 07-00 → JRT-CAN-24IO #0 (07-00)

**CH 3802** bits 15-08 → JRT-CAN-24IO #0 (15-08)

**CH 3803** bits 07-00 → JRT-CAN-24IO #0 (23-16)

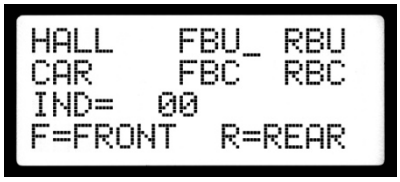
**CH 3803** bits 15-08 → JRT-CAN-24IO #1 (07-00)

**CH 3804** bits 07-00 → JRT-CAN-24IO #1 (15-08)

**CH 3804** bits 15-08 → JRT-CAN-24IO #1 (23-16)

### 1.2.8. Enter Call Menu:

This menu allows placing hall calls or car calls. When there is a dispatcher in the group or that the elevator B of a duplex is in use, it is impossible to place hall calls, because they are controlled by the elevator A of the duplex. It is also possible to see at which floor the elevator is. Use the arrow keys to select the call to place and press "ENTER" to place the call.




***If the selection is not available, a "NOT AVAILABLE" will be displayed. If the controller does not have the rear call option, Rxxx will be shown instead of rear calls.***

### 1.2.9. Language Menu:

This menu allows choosing the operation language.

**For French:**

- Press "UP".

**For English:**

- Press "DOWN";

  or

- Press "ESC" to return to the previous menu.

### 1.2.10. Password Menu:

This menu allows entering a password to unlock the parameters modification menus. The password is "1234". After 3 hours of keyboard inactivity, the "LCD" utility will be locked again.

**Entering the password:**

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" keys to modify the number;
- Press "ENTER" to save;

  or

- Press "ESC" to return to the previous menu.

### 1.2.11. Communication:

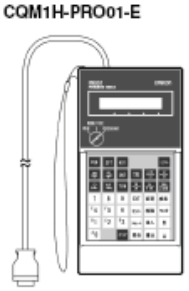
When the "LCD" utility writes successfully in the PLC, the following screen is displayed:

However, if the cable linking the screen to the PLC is defective, not well connected or that the communication parameters are incorrect, the following screen is displayed.

***Verify that the cable between the "LCD" utility and the PLC is well connected. Once this is corrected, turn the power off to reset. If the problem persists, please contact Automatisation JRT.***

## 2. USE OF THE PROGRAMMING CONSOLE (PRO01 OU PRO27):

The programming console, as the LCD utility, allows access to the visualisation and modification registers. It is also possible, under the supervision of Automatisation JRT Inc., to modify or add a programming sequence.



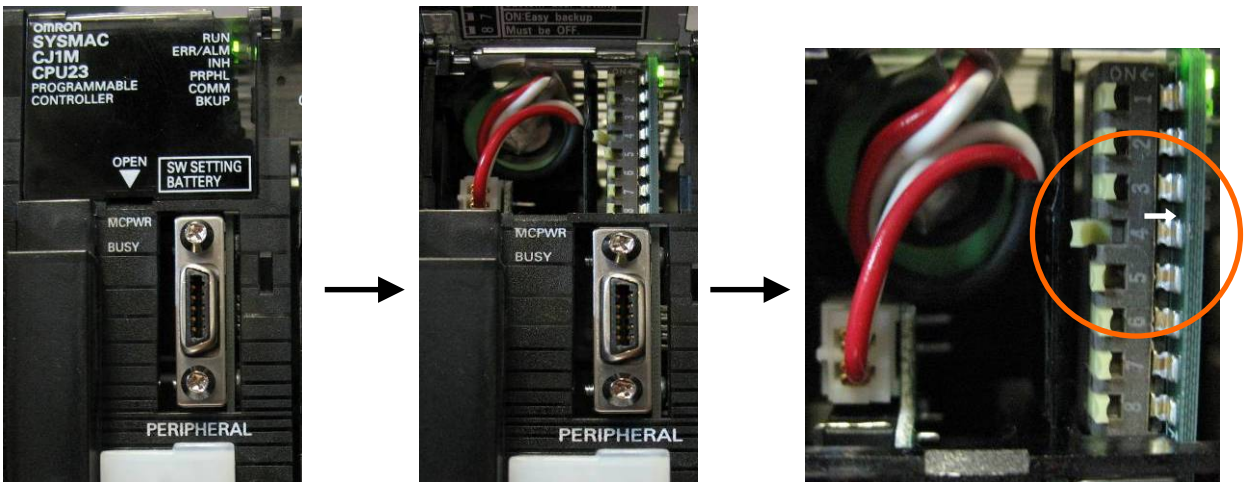

### 2.1. PROGRAMMING CONSOLE CONNECTION:

The programming console is connected on the peripheral port "PERIPHERAL" of the PLC. Always leave the key on the console in "MONITOR" mode.

For example if the peripheral port is already used by the LDC supervision, do not forget to reconnect it once it's done. The switches must also be put back as they were.

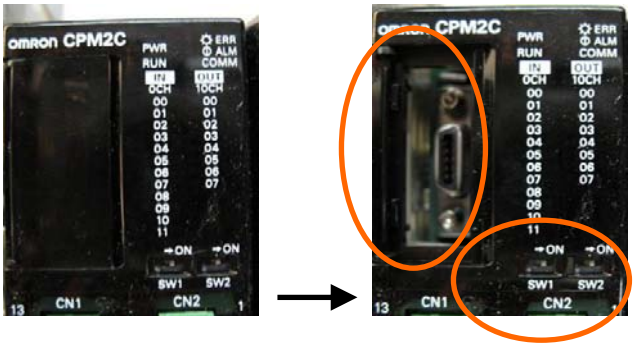
#### 2.1.1. On the CJ1M PLC:

Open the "SW SETTING AND BATTERY" door located on top of the communication port and put the switch "4" at "OFF". The console will only display hyphens if the switch"4" is not "OFF" (RIGHT).




#### 2.1.2. On the CPM2C PLC:

Open the door on top of the "CN1" connector to access the communication port. Put the switches "SW1" and "SW2" at "OFF".




## 2.2. VISUALISING AND MODIFYING A DM (ELEVATOR CONFIGURATION):

For example, to access register 492, you must do as followed:

- CLR → MONTR → 3
- DM → 492 → MONTR

Screen = | **DM492** 0000 |

To modify a register, do as followed:

- CHG → 1234 → WRITE

Screen = | **DM492** 1234 |

To return to the beginning:

- CLR → CLR

## 2.3. CONSULTING THE ALARMS:

- CLR → MONTR → 3
- SHIFT → CH/*DM → HR → 80 → MONTR → SHIFT → MONTR

Screen =

| **HR80** |
|---|
| **0000000001000000** |
| **Bit15 Bit0** |

- Thus, only the HR8006 alarm is activated. Do ↓ to visualise le HR81:

Screen =

| **HR81** |
|---|
| **0000010010000000** |
| **Bit15 Bit0** |

- Thus, HR8107 are HR8110 are activated.
- Do ↓ to see the other registers.

***REFER TO SECTION 14.5 FOR THE ALARMS DESCRIPTION.***

## 3. TEMPORARY START-UP:

A. Install jumpers between the following terminals:

- "J0" and "J5" (governor and emergency brake circuit);
- "J5" and "J7" (hoistway access line);
- "J7" and "J9" if there is no car top inspection box;
- "J9" and "J10" (car stop) and special emergency stop, PH2;
- "J10" and "LNH" (normal up limit);
- "J10" and "LNB" (normal down limit);
- "J9" and "LRH" (normal up slowdown limit);
- "J9" and "LRB" (normal down slowdown limit);
- "J9" and "PP" (hall doors closed);
- "J9" and "PC" (car door closed);
- "J9" and "HDL" (hall doors locked if manual doors or motorised cam);
- "PCH" and "LTT" (extreme high limit in inspection).
- "J9" and "LRH" (normal up slowdown limit);
- "J9" and "LRB" (normal down slowdown limit).

**208-460-600 volts controller without isolation transformer:**

Connect the main power supply with the main switch has indicated in the drawings.

***For the first time, remove the 3 fuses and measure the voltage.***

B. Adjust the overload relay according to the motor current name plate.

- Relay RS1 = High speed
- Relay RS2 = Low speed

C. Connect the motor to the controller.

D. Connect the resistors bank to the controller if required.

E. Measure:

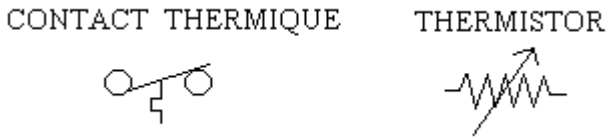
- 120 volts AC between "J" and "N", "JC" and "N".
- 24 VDC between "+A" and "COM", "+AC" and "COM", "+GR" and "COM", "+G" and "COM" (group only), ("+DC" and "COM") (internal voltage), "+24V" and "COM" (tape selector or governor encoder voltage).

F. The PLC "POWER" and "RUN" green lights must be on at all time.

G. Put the (RPR) loss and reversing phase relay in phase (L1, L2, L3 in order). When well phased, the yellow and green lights will be on.

H. If there is a TUS thermistor sensor relay, it must be connected to the motor sensor (P1-P2). Reset the relay by pressing the reset button on the relay, the red light must turn off. If the relay is not reset, there is a problem with the motor's thermistor sensors. The motor's sensors must be of thermistor type and not a thermal contact.

The sensors may be simulated by putting a resistor of 400 to 500 OHMS ¼ or ½ watts between terminals P1 and P2 instead of the thermistor sensors.




I. To move in inspection mode:

**Controller inspection:**

Put the hall and car doors derivation switches at the position "STOP".

Put a jumper between the terminals +A" and "ISR". Put the inspection switch at the position "INSPECTION". Press on the buttons "UP" or "DOWN" of the "JRT-INT-02" card to move the elevator.

**Top of the car inspection or remote control:**

Do not connect the terminal "ISR". The signal corresponding to "ISR" must be turned off. Connect the button "UP" and "DOWN" with your remote between the terminals "+A" and "PCH" and "+A" and "PCB".

J. CONSTRUCTION MODE:

The "construction" mode deactivates temporarily certain detections to facilitate the elevator car construction in "inspection" mode. As soon as the elevator controller is placed in "automatic" mode and that a call has been placed, the "construction" mode will be deactivated automatically and all signals will be in function.

The elevator controller must be in "inspection" mode

**With the controller's LCD screen:**

- Press "ESC" up to main menu;
- Press "UP or DOWN" up to "Construction mode" menu ;
- Press "ENTER";
- Press "UP" to activate the "construction" mode;
- Presses "ENTER".

**With the programming console (CQM1-PRO01):**

Put the value 0001 in DM 249 to activate the mode (see section 1).

**Deactivated Circuits:**

- Brake contact supervision.
- Motor temperature "THM".
- Generator signals "GEN1, GEN2".
- Switches supervision "LRH, LRB. Note that the switches must still be short-circuited at the start-up.
- Motor overload alarm de surcharge for speed reduction (Only the drive protects the motor).
- Bar code inputs "P1, P2, and P3... "
- The fire signals are completely deactivated.
- Car overload signal "LW2".
- All the outputs that set off the alarms are deactivated.

K. At this point of the procedure, please verify:

**PLC inputs which must be activated:**

- +A, +DC, PC, PP, GTS, LNH, LRH, LNB, LRB, J, SW6, RPR.
- THM: if the motor has a temperature sensor..
- HDL (locked hall door contact if manual door or motorized cam).

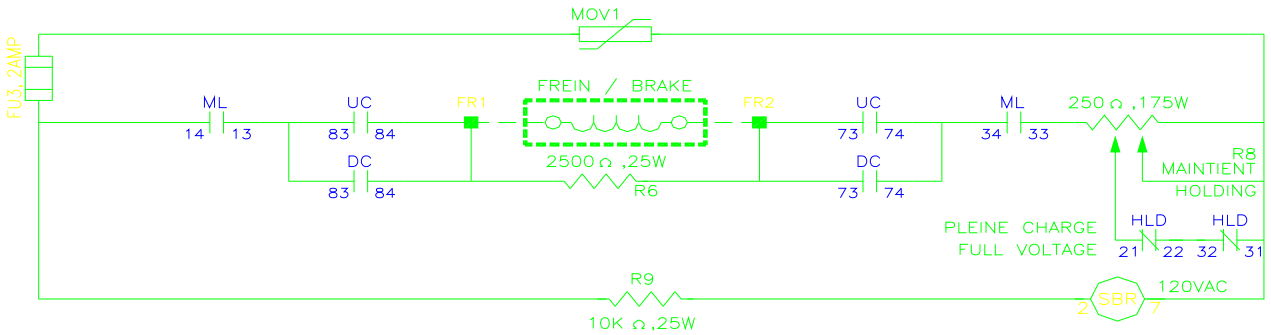
**The relays:**

- ISR must not be activated.
- R5 must be activated.
- BRK must be activated.

**The alarms:**

- By using the LCD, erase the alarms and then consult the alarms list to check that there are no more. (Section 1 for use of the LCD).

L. Adjust the brake:




- **At Start-up**: The holding voltage (if applicable) must be adjusted as the controller drawing on page 2 (HOLDING CURSOR ON R8). The voltage of the overexcitement is adjustable by using the cursor (FULL VOLTAGE) on the resistor R8 with HLD relay OFF and the length by (DM44) register in the PLC. That delay should be around 1 second.4
- **At Stopping**: The brake must be applied completely after 0,2 second. Connect the brake's auxiliary contacts to the controller's "BRC" terminal as per the electrical prints. To activate or deactivate the breaking switch supervision and to set the contact (NO/NC)).

***IMPORTANT***

***The PLC inputs are designed to operate 24 volts DC. DANGER: Never apply 120 volts AC for it may cause severe damage to the inputs.***

***On reception of the controller, the "COM" terminal is grounded.***

M. The car may now be moved in inspection by using a jumper between "+A" and "PCH" to go up or between "+A" and "PCB" to go down. The car may also be moved using the controller's "UP" and "DOWN" buttons by putting the controller's inspection switch in Inspection mode. However, a jumper must be installed between "+A" and "ISR", the doors' bypass switches must be at "NORMAL" position and the hoistway key deactivated.

N. If necessary, adjust the SCR « smooth move » module (see chapter 4).

The PCH input light turns on by pressing the up button. Therefore, the output lights SU, UC and VT will turn on, the contactors UC-ML and VT (IF AC 2 SPEEDS) will activate and the elevator will start to go up. The PCB input light turns on by pressing on the down button. Therefore, the output lights SD, DC, VT will turn on, the contactors DC, ML and VT (IF AC 2 SPEEDS) will activate and the elevator will start to go down. Relay R5 must stay on.

**For elevators with non-perforated tape selectors:**

- When the elevator is going up, if it is always in small speed and the LT (IF AC 2 SPEEDS) contactor is activated but not the VT (IF AC 2 SPEEDS), make the elevator go down and at the same time using a jumper give a pulse between +A and DZO (if there is a DZO1 signal, it must also be activated at the same time as DZO) and after give a pulse between +A and DSL.

- When the elevator is going down, if it is always in small speed and the LT (IF AC 2 SPEEDS) contactor is activated but not the VT (IF AC 2 SPEEDS), make the elevator go up and at the same time using a jumper give a pulse between +A and DZO (if there is a DZO1 signal, it must also be activated at the same time as DZO) and after give a pulse between +A and USL.

## 4. FINAL START-UP:

A. Proceed to the adjustment of the tape selector or the encoder's governor (Standard tape selector: section 6.1, perforated tape: section 6.2 or governor's encoder: section 6.3).

B. Adjust the resistor bank: (not required if the controller is provided with a SCR smooth move module). Generally, the high speed acceleration resistors do not need to be adjusted (two 6 ohms resistors in parallel). However, the high speed deceleration resistors (three 6 ohms resistors in series), often need to be adjusted. If there are fewer resistors, the car will decelerate faster; if there are more resistors, it will decelerate slower.

C. Adjust the TVT and TLT timers (not required if the controller is provided with a SCR smooth move module AND AC 2 SPEEDS ONLY).

TVT = High speed acceleration timer that activates the RV contactor which short-circuits the acceleration resistors.

TLT = High speed deceleration timer that activates the RL contactor which short-circuits the deceleration resistors.

***Note: It is important that the RL contactor is activated when the car enters in the leveler in order to always have the same final landing speed.***

D. Put the elevator in "maintenance" mode using the controller's switch. Put the inspection switch to "NORMAL". It is now possible to place car calls without the doors opening.

E. Remove the jumpers from the mechanical slowdown limits (LRH, LRB)

F. Adjust the hoistway access travelling limits (see section 6.4)

G. Proceed to all tests and adjustments described in sections 9.

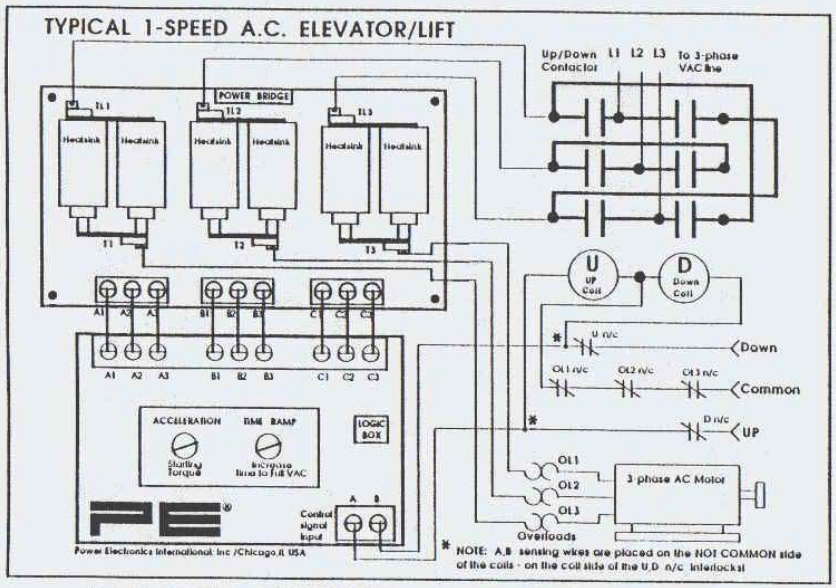
To reset all the alarms, activate the "MAINTENANCE" switch 4 times in a row or erase the alarms with the LCD:

- Press "ESC" up to main menu;
- Press "UP or DOWN" up to "ERASE ALARMS";
- Press "ENTER";
- Press "ENTER".

***WARNING***

***PLC inputs are designed to operate at 24VDC. DANGER: Never apply 120VAC for it may cause severe damage to the inputs.***

***On reception of the controller, the COM terminal is grounded.***




# 1-SPEED WIRING AND OPERATION

The power bridge contains the silicon controlled rectifiers (SCRs) which are phase controled by signals coming from the logic box.The SCRs act as electronic "valves" controlling the amount of voltage which the elevator motor will see.With the TIME and TORQUE settings on the logic box it is possible to select a motor starting torque (voltage) and the amount of time to reach full motor torque. Upon reversing of the phases via the up/down contactor, the control will reset from the signal of the contactor coil giving smooth/soft and stepless ramping up of motor torque. Thus, the elevator will have a completely smooth/soft/stepless starting in either the up or down direction. Also, via the signals coming from the contactor coils, the power contactors will open and close under NO CURRENT. This patented feature effectively eliminates contactor arcing on the "make and break" (open &close) cycle giving little to no contactor wear and greatly reducing the chance of contacts burning or welding! This system gives increased safety to all elevators since it waits for a coil signal to begin operation. A falsely closed contactor will not see current flow until the unit detects a coil control signal. In this way E-Series™ reduced torque control acts as a redundant 3-phase safety switch!

## Physical Construction of 1 and 2-speed controls

E-Series™ units under 20 FLA (4 & 9 amps) are of single piece construction. Controls of 20 amps or larger ("c"size & above) consist of 2-pieces, a power bridge portion and the logic box. The 2-piece controls are connected together, as shown, with the LOGIC BOX DIMENSIONS: 7-3/8" x 5.5" x 3-1/8" (18.7cm x 14cm x 7.9cm) POWER BRIDGE DIMENSIONS: 20A=11"x5"x3-1/8(27.9cmx12.7cmx7.9cm); 40A=12"x6"x3-3/4" (30.5cmx15.2cmx9.5cm); 60A=12"x7"x3-3/4"(30.5cmx17.8cmx9.5cm);90A=20"x7"x5-1/8" (50.8cmx17.8cmx13cm); 150A=28"x12"x5-1/4"(71.1cmx30.5cmx13.3cm). Other amperage sizes (including 4A & 9A units) dimensions are on the separate model chart.

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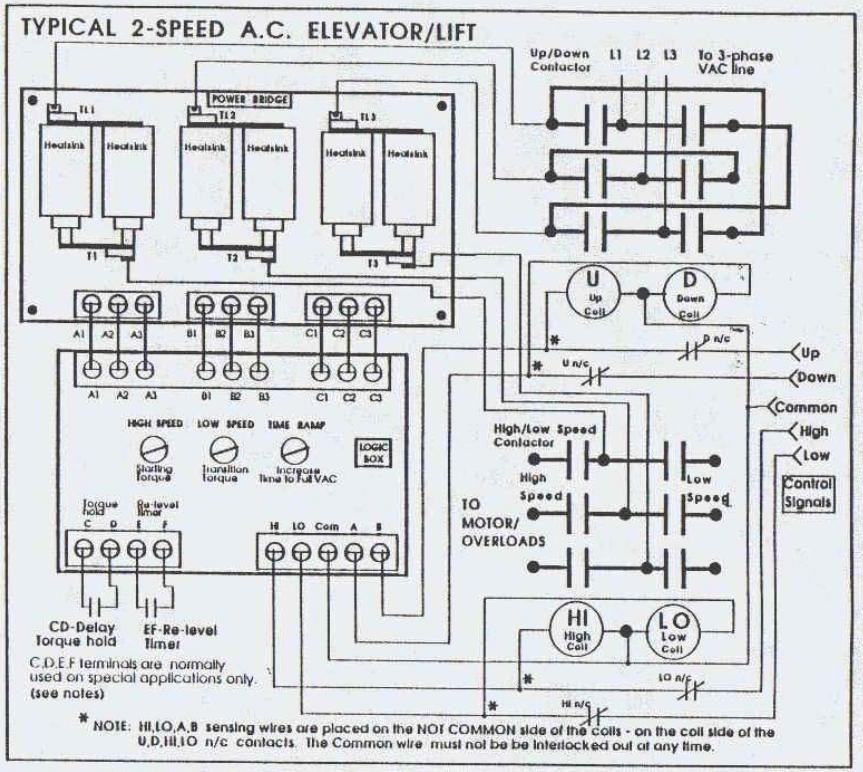


# 2-SPEED WIRING AND OPERATION

The 2-speed system operates like the 1-speed system except for the necessity of switching from one speed to another. The 2-speed logic box receives not only an up/down signal , but also a high/low speed signal. Like the 1-speed control, contactor arcing is eliminated on all power contactors! By "sensing" the control signals from the contactor coils the PE 2-speed reduced torque unit is able to give a very smooth 2-speed a.c. elevator from-start into high speed and a smooth/soft transition from high speed to low speed! This control has both HIGH and LOW speed initial starting torque adjustments and a TIME adjustment to reach full torque (only one TIME adjust is required since 2-speed motors are constant torque in both windings). The "CD terminal - delay torque hold " will hold minimum motor torque while closed. It is only used in the high to low speed deceleration and then *only* when special control is required. Typical closure time, if used, is from 1 to 2 seconds. The "EF terminal - relevel timer" will bring motor torque from the minimum setting (LOW speed torque adjustment) to full torque in approximately 1.5 seconds (longer times are available).The relevel is much smoother and softer than across the line voltage relevelling. Upon connection of the control signal wires to the logic box, electrical interlocks must not cut out the control signals at the wrong point or time. Without a proper signal, the control will stay in the "off"mode.

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# SERVICE & ADJUSTMENT
## REDUCED TORQUE CONTROL
## SINGLE SPEED TWO SPEED
## ADJUSTMENT

IMPORTANT!

*MULTI-VOLTAGE CONTROLS MUST BE SET FOR CORRECT VAC BEFORE OPERATING CONTROL!*

## I. SINGLE SPEED ADJUSTMENT

**A.** Set the TIME adjustment at the maximum point and the INITIAL TORQUE adjustment at the minimum point. (This setting provides the softest start, but the initial torque may be too small to start the motor for the first few cycles.)

**B.** Set the INITIAL TORQUE adjustment first; usually 1/4 to 1/ 2 of a turn from the minimum torque setting is adequate.

**C.** Decrease the TIME adjustment if the starting is too soft under the half load condition.

## II. TWO SPEED ADJUSTMENT

**note: For E-Series substitute HI for Accel & LO for Decel.

**A.** Set the TIME adjustment at the maximum point and the ACCELERATION and DECELERATION INITIAL TORQUE adjustments at the minimum points. (This setting provides the softest start, but the initial torque may be too small to start the motor for the first few cycles.)

**B.** Set the ACCELERATION TORQUE adjustment first: usually 1/4 to 1/2 of a turn from the minimum torque setting is adequate.

**C.** Then set the DECELERATION TORQUE adjustment by turning it to the minimum torque setting. If the transition from high to low speed is too soft, increase the setting until an appropriate transition is obtained. Usually setting the DECELERATION TORQUE adjustment to minimum is the best setting.

## SERVICE

All readings should be taken with a standard analog type VOM (volt-ohm meter).

## III. SINGLE SPEED CONTROLS

**Step#1** - Disconnect motor from T1, T2 and T3.

**Step#2** - Set INITIAL TORQUE adjustment to minimum and the TIME adjustment to maximum.

**Step#3** - Energize the contactor - for proper operation the following readings should be taken (example is for a 460VAC, three phase system with 115 VAC control voltage standard).

**A.** From TL1 to TL2 ,TL2 to TL3 and TL1 to TL3 - 460VAC

**B.** Control signal point **A & B** terminals - 115 VAC. It is important that this reading be taken across the A & B screws on the logic box . If no voltage can be read across these two points then check for misplacement of an electrical interlock. The " common" side of the control signal is sensed through the coil which is NOT ENERGIZED, so do not interlock the common wire out of the circuit. Simply checking for 115 VAC from one screw terminal and the "common" ground wire is NOT sufficient. Without a proper signal to the A & B terminals (and the HI, LO and COMMON in a two-speed system), the output of the control at T1, T2, T3 will remain -0- VAC. "A,B" must only be hooked up to the coils NOT THE CONTROL TRANSFORMER!

**C.** After six seconds take readings at T1, T2 and T3 (with the motor disconnected).

1. From T1 to T2, T2 to T3 and T1 to T3 the voltage is approximately 80-95% of the line voltage. For the 460 VAC control the reading would be approximately 405 VAC.
2. A -0-VAC output will occur if the proper control signal is not received (see **III.B.**and **IV.A.,B.,C.**).

**D.** With the TORQUE adjustment at minimum and the TIME adjustment at maximum, read the meter across T1, T2 and T3 (as in "C1" above), from the instant the contactor is closed. The meter should move slowly during the first five seconds, then quickly for the last second. The total time to reach 88% of the line voltage should be approximately six to nine seconds. Each phase to phase test should be similiar in voltage profile, no matter where the TORQUE and TIME adjustments are set. Due to the dampening factor in all volt-ohm meters it is difficult to detect the exact voltage level that is associated with a particular torque setting. However, the varying of the TORQUE and TIME settings can be readily identified on the meter. **The important point is that all three voltage profiles are the same.**

**E.** When the SCR Bridge portion of the control is separate from the control box (two piece units - size "c" and larger) other readings can be taken.

1. A1 to B1, B1 to C1 and C1 to A1 - will give line voltage when the contactor is energized.
2. A2 to A3, B2 to B3 and C2 to C3 should read .5 to 1.0 volts D.C. after six seconds. A voltage profile similiar to the profile described in section "**III.D.**", should be seen after the contactor is switched from an open to a closed position.

## IV. TWO SPEED TORQUE CONTROLS

Steps #1,#2 and #3 are the same as they are for the single speed control in section " **III** .". The difference lies with the control signal circuitry. For proper operation check the following control signals across the screws on the box. See section" **III.B.**" for general testing procedure.

**A.** When in the contactor is energized for **low speed** operation the meter will read:

1. Between HI and COMMON..... -0- VAC
2. Between LO and COMMON..... 115 VAC
3. Between LO and HI..... 115 VAC
4. Between A and B..... 115 VAC

**B.** When the contactor is energized for **high speed** operation the meter will read:

1. Between LO and COMMON .....-0- VAC
2. Between HI and COMMON..... 115 VAC
3. Between HI and LO..... 115 VAC
4. Between A and B..... 115 VAC

**C.** If another control voltage is used it will appear instead of 115 VAC listed above.

## CIRCUIT BREAKERS/ FUSES

In heavy jogging applications, single or two-speed, the circuit breakers or fuses may repeatedly open. Increasing the TORQUE setting or decreasing the TIME setting will usually take care of this. Larger circuit breakers or fuses will also work.


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# 5. CONTROLLER TYPE:

## 5.1. TWO CAR GROUP CONTROLLERS (WITHOUT DISPATCHER):

A main switch is required for each controller. There is no need for a separate power supply for the group itself.

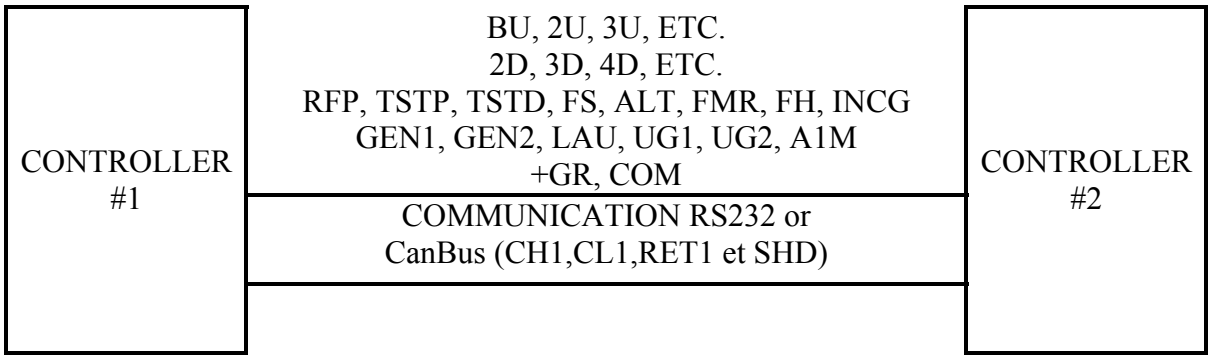
There is a PLC in each controller; as soon as the two PLC's are connected together through their RS232 port or the CanBus network, they automatically become a group and start dispatching hall calls to one another. If the communication link is broken, they start working as two separate controllers. Therefore, you do not have to connect both controllers together during building construction.

That type of controller provides continuous dispatch back up service. This means that as soon as one of the controllers is turned off, looses power, or becomes in trouble, the other one takes over all hall calls without clearing any of them.

**Two car group (duplex) connection:**

You must connect to both controllers:

- The common supply to the group: +GR, COM;
- The entire hall calls: BU, 2U, 3U, etc.2D, 3D, etc.;
- Phase 1 fire services, if there are any: RFP, TSTP, TSTD, FS, ALT, FMR, FH, INCG;
- Emergency generator services if there is:GEN1, GEN2, LAU, UG1, UG2, A1M;
- After that, connect both PLCs together with the communication port RS232 by using the cable supplied with the controllers or with the CanBus network (CH1,CL1,RET1 et SHD)




***Since each controller has its own CPU, if some changes are made to a timer or to a programmed function described at chapter 12, they must be made in both controllers.***

## 5.2. GROUP CONTROLLER (WITH DISPATCHER):

A main switch is required for each controller: #1, #2, #3, etc. A separate 120VAC power supply is required for the dispatcher.

Each simplex controller has its own CPU, which automatically changes to group mode, when connected to the group network. At that moment, the group dispatches hall calls to each controllers according to a sophisticated algorithm.

The program contained in the group is designed to operate in simplex, duplex, triplex (…) modes. The transition between these modes is automatic.

Each simplex controller has a back up sequence in case the group is not present. Each controller takes over certain hall calls (according to predetermined areas depending on the project) and takes over every car call. That sequence is controlled by each elevator's CPU and the OK signals of each controller.

*Example:*

*In the case of a nine-storied triplex, the controller #1 could take over hall calls for the floors 1 to 3; controller #2 those for the floors number 4 to 6, controller #3 those for the floors number 7 to 9 and each controller takes over all car calls. Controller #1 receives signals OK2 and OK3, which confirms that both elevators are present, and functioning, same thing for the other controllers. Controller #2 receives signals OK1 and OK3 and controller #3 receives signal OK1 and OK2. If controller #2 is absent, controller #1 will take over the hall calls for the floors number 1 to 6 and controller #3 will take over those for the floors number 7 to 9. If controllers #2 and #3 are absents, controller #1 will take over all hall calls, etc.*

**Group connection:**

Connect to all controllers:

- Terminals "COM" and "+GR";
- Phase 1 fire services: RFP, TSTP, TSTD, FS, ALT, FMR, FH, INCG;
- Emergency generator services if there are any: GEN1, GEN2;
- Hall calls: BU, 2D, 2U, etc. only if the controllers using the RS485 communication;
- Presence signals between the controllers: OK1, OK2, OK3, etc.;
- RS485 communication cables (2 shielded pairs): TX+, TX-, RX+, RX, and SHD.

  or

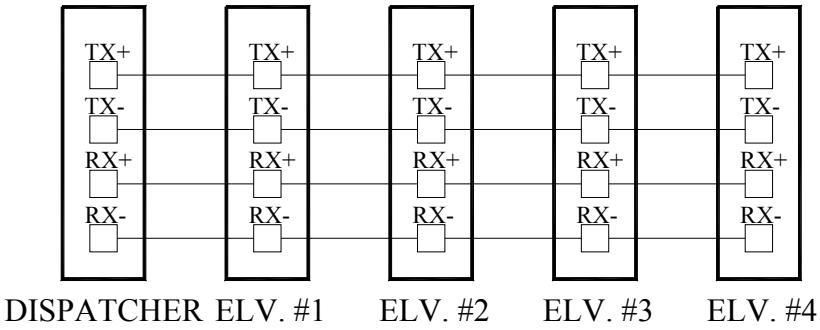
- CanBus Communication (1 shielded pair + 1 x 18AWG): CH1, CL1, RET1, SHD

**Connection to the dispatcher:**

Connect the following signals on the dispatcher:

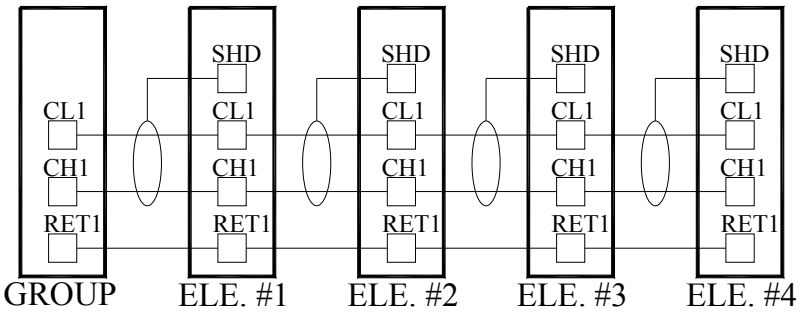
- All hall calls: BU, 2U, 3U, etc. and 2D, 3D, etc.;

- Fire services if there are any: RFP, TSTP, TSTD, FS, ALT, FMR, INCG, FH;
- Emergency generator services if there are any: GEN1, GEN2, UG1, UG2, UG3, etc;
- RS485 communication cables (2 shielded pairs): TX+, TX-, RX+, RX, and SHD.




or

- CanBus Communication (1 shielded pair + 1 x 18AWG): CH1, CL1, RET1, SHD



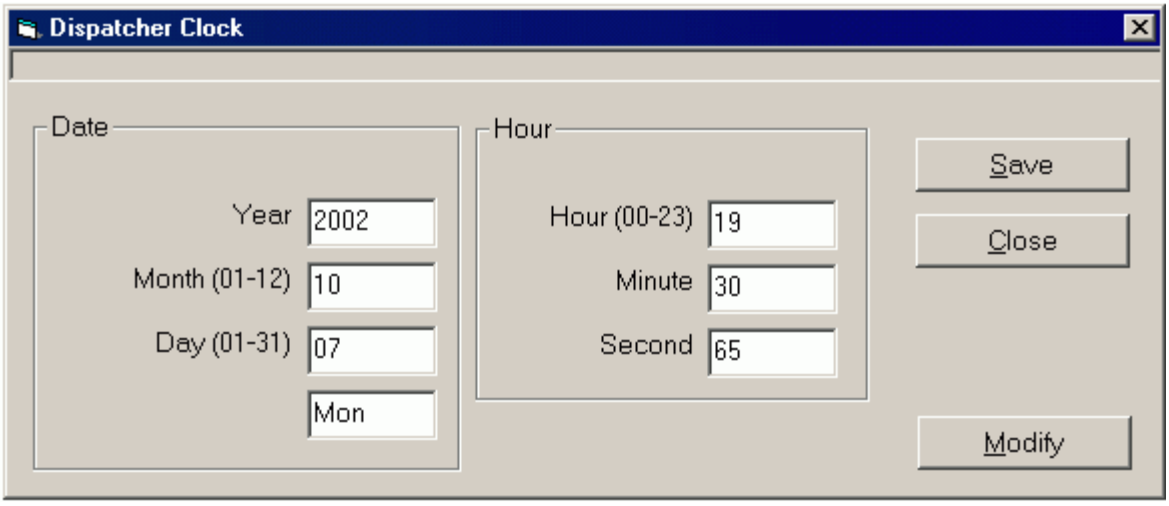

Since all controllers have their own CPU, if there is a modification of the timers, or if there is a programming of the functions described in chapter 12, it must be done on all controllers. If the system has an operator screen, it is possible to carry out, from that screen, the timer modifications and the programming of the specified functions simultaneously on all controllers (Please refer to the operator screen manual).

## 5.3. CLOCK SETTING ON DISPATCHER WITH OPERATOR SCREEN:

The dispatcher has a real-time clock; however, it does not add or subtract an hour automatically when spring or fall comes. It is primarily used for the rush hour variations grid. Thus, it is important to make sure the clock is set at the right time.

**To modify time**

***Move the mouse cursor on the clock menu and click on the left mouse button.***




- Move the cursor on "MODIFY", and click on the left mouse button. From then on, the data boxes are accessible.

- Move the cursor on the box to modify. Enter the new data. Repeat this procedure for each data that needs to be modified.

- Move the cursor on "SAVE" and click on the left mouse button to send the newly set time to the dispatcher. The message "SUCCESS" should appear, if it is not the case, save again.

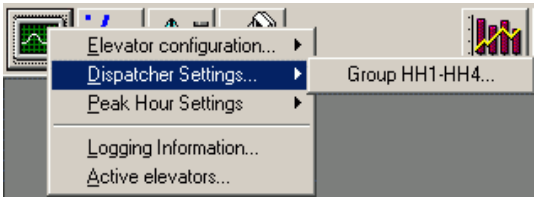
  ***Windows automatically determines the day of the week.***

- To exit the window without modifying the parameters, click on one of the two buttons shown below.

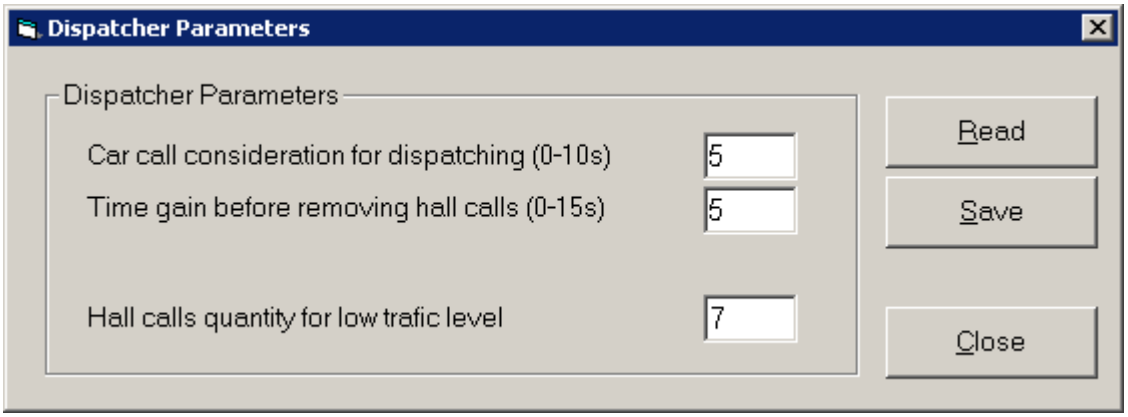
## 5.4. CALL DISPATCH CONFIGURATION, USING THE OPERATOR SCREEN:

If the elevator group includes an autonomous dispatcher managing hall calls dispatch, this menu is accessible:

- Move the cursor over the "SINE WAVE" button, and click on the left mouse button.




- Move the cursor on the "DISPATCHER" option and click on the left mouse button.




This window allows modifying some of the dispatcher's parameters.

**Dispatch of calls:**

- Car calls consideration for dispatching (0-10s):

  When two elevators are moving in the same direction, this parameter gives priority to the elevator that has a car call at the same level of the hall call. The hall call should be given to the elevator that has a car call at the same level, but if the elevator is to far from the hall call level compared to the other elevator, the dispatcher will optimise the waiting time and will give the hall call to the best elevator.

  This parameter should be adjusted according to the number of floors, the speed and the number of elevators in the group. Factory setup at 5 seconds.

- Time gain before removing a call (0-15s):

  The dispatcher computes the waiting time for every new hall call and the ones previously registered. When an interesting time reduction is computed, the hall call will be transferred to another elevator. According to the elevators speed, this parameter can be increased if required. If that parameter is too low, hall calls will switch from a car to another rapidly and continuously.

  Factory setup at 5 seconds.

- Hall calls quantity for detection of low traffic level:

  This register sets a hall call minimal threshold before indicating a low traffic period.

**Parameter modification:**

- To upload current parameters from the dispatcher, move the mouse cursor over the "READ"button and click on the left mouse button.

- Move the cursor on the box containing the value to modify and click the left mouse button.

- Enter the new value.

- Repeat these two steps for each parameter to modify.

**Saving the parameters in the dispatcher:**

- Move the cursor on the "SAVE" button and click the left mouse button. When the transfer is done, the message "SUCCESS" should appear, if it's not the case, save again.

- To exit the window without modifying the parameters, move the cursor on one of the buttons shown below and click on the left mouse button:

or

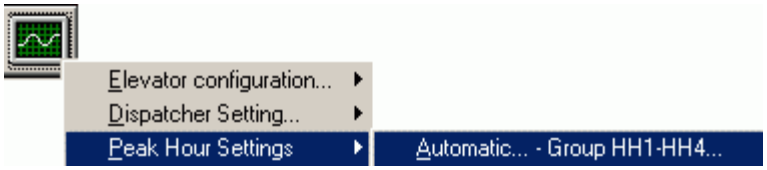
## 5.5. PEAK HOURS SETTINGS:

There are two ways to manage peak hours; there is the automatic way and the manual way. In the automatic mode, the dispatcher uses certain parameters previously received to detect and manage peak hours. In the manual mode, the user specifies at which time and for how long peak hours will be effective.

- Move the mouse cursor over the "SINE WAVE" button and press the left mouse button.

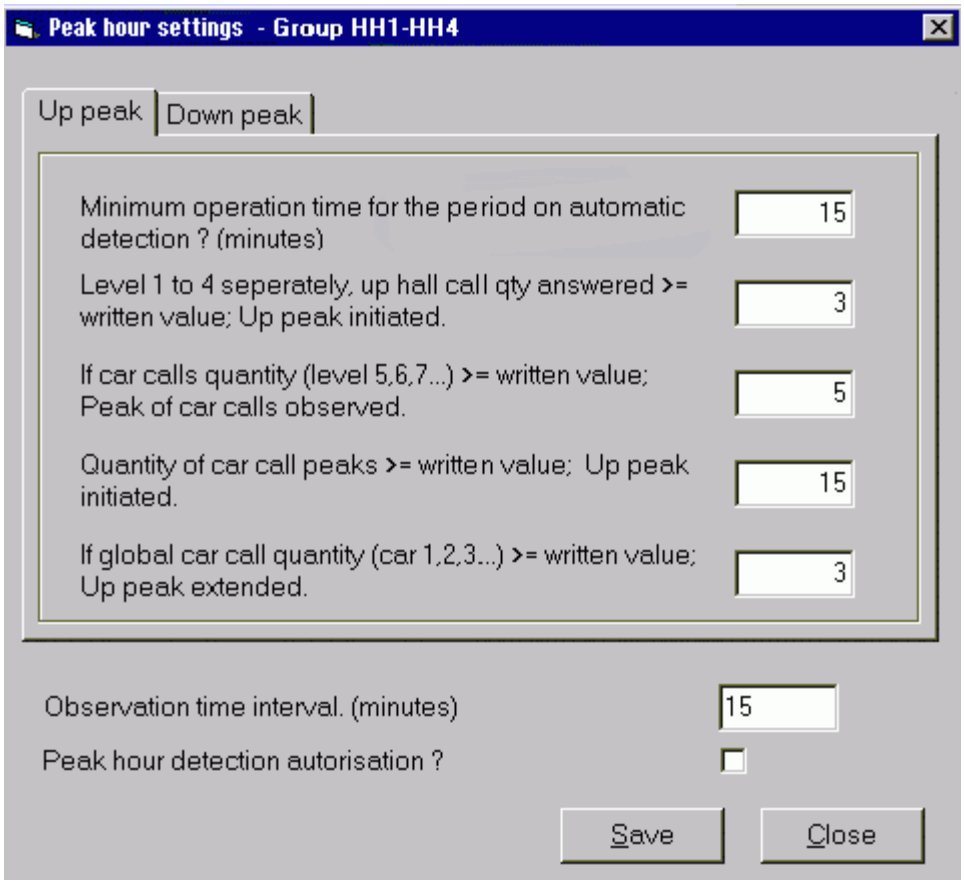
- Slide the mouse cursor on the menu "Peak Hour Settings".

- Wait for the menu on the right to appear.




- Slide the mouse cursor to the right to select the desired mode and click the left mouse button to access the selected menu.

**Observation Criteria for automatic peak hours detection:**


Peak hour settings - Group HH1-HH4
Up peak
Down peak
Minimum operation time for the period on automatic detection ? (minutes)
15
Level 1 to 4 seperately, up hall call qty answered >= written value; Up peak initiated.
3
If car calls quantity (level 5,6,7...) >= written value; Peak of car calls observed.
5
Quantity of car call peaks >= written value; Up peak initiated.
15
If global car call quantity (car 1,2,3...) >= written value; Up peak extended.
3
Observation time interval. (minutes)
15
Peak hour detection autorisation ?
Save
Close

This window has a toll bar offering 2 choices to the user.

- Selecting the peak period to modify:

  Move the cursor on the text corresponding to the requested peak period, and click on the left mouse button. A list of the modifiable parameters will appear with the current values.

- Parameter modifications:

  Move the mouse cursor on the box containing the value to modify and click on the left mouse button. Enter the new value with the keyboard. Repeat for all parameters to modify.

**Saving modified parameters:**

Move the mouse cursor on the "SAVE" button and press the left mouse button. When the transfer is done, the message "SUCCESS" should appear. If it's not the case, save again.

"Up peak" and "Down peak" parameters are transferred at the same time.

***To exit the window without modifying the parameters, move the mouse cursor on one of the following buttons and press the left mouse button:***

or

**"Up peak" parameters description:**

- Minimum operation time of the period with automatic detection:

  As soon as an up peak period is detected, this parameter sets the minimum operation time. When that delay is expired, if the building traffic doesn't require the peak period, the group will return in normal mode.

- Level 1 to 4 separately, number of up hall calls answered >= entered value; Up peak

  The dispatcher counts answered up calls for the 4 first levels of the building. If the value of 1 of these counters becomes equal or higher of the registered value, an up peak period will be initiated.

  When the time interval has expired, the counters are reset and the cycle restarts.

  *Example:*

  *If the dispatcher counts more than 5 up calls at floor 3 in a period of 3 minutes, an up peak period is initiated for 33 minutes.*

- If car calls quantity (level 5, 6, 7...) >= entered value; observed peak of car calls:

  The dispatcher determines which elevators are located in the first 4 levels of the building and are in up direction.

  The dispatcher counts up all car calls of the elevators of levels 5, 6, 7 and more.

  If the number of car calls becomes equal or higher to the entered value, a car call peak is observed. When the observed number of peak periods reaches a threshold (following parameter: number of car calls peak >= entered value), an up peak period will be triggered for the time mentioned above.

  When the time interval has expired, the number of car calls peak counter is reset and the cycle restarts.

- Number of car calls peak >= entered value; up peak:

  This parameter fixes a threshold for the car calls peak before triggering an up peak period (see previous parameter)

  *Example:*

  *For a group of 4 elevators, if the elevators are at:*

  *#1 = 1st floor*

*#2 = 7th floor*

*#3 = 5th floor*

*#4 = 4th floor*

*Only the car calls from floors 5 and up of elevators #1 and #4 are accumulated. When the count of car calls equals 3, an up peak is observed and when the counts is observed 3 times within 3 minutes, and up peak period is triggered for 33 minutes.*

- If the total amount of car calls (car 1, 2, 3, ect.) >= entered value; up peak extended

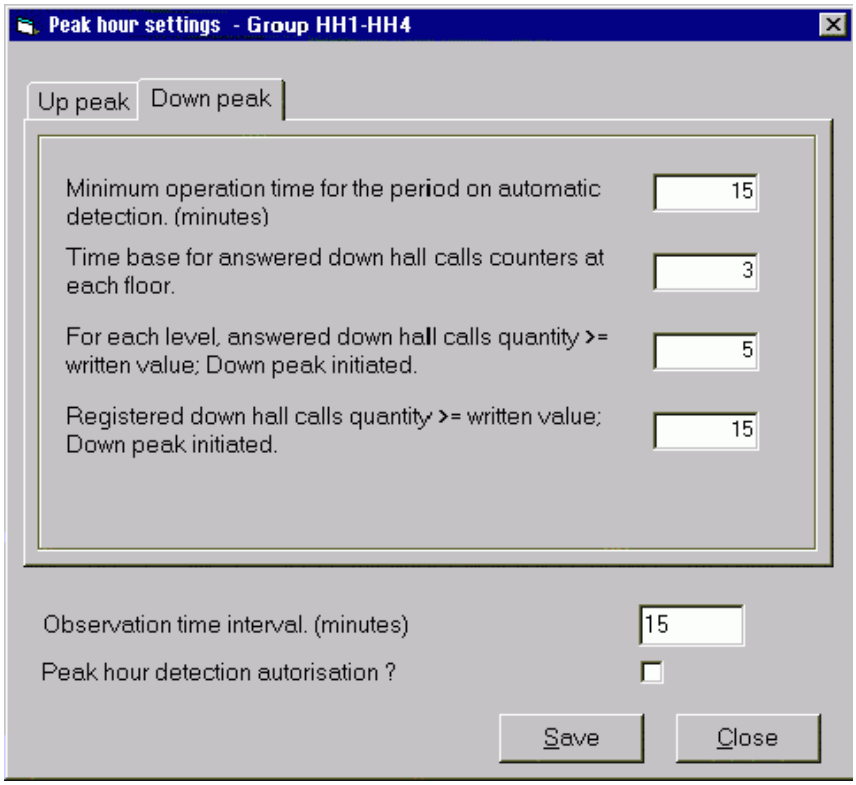
  When an up peak period has been triggered and the minimal operation time has expired, the system returns in normal mode. However, the dispatcher counts all car calls of each elevators and if the count is equal or higher to the entered value, the up peak period will be extended.

  The peak period will no longer be extended as soon as one elevator is free or if the number of car calls is lower than the entered value.

  *Example:*

  *Entered value = 0, up peak period extended until one elevator has stopped and doesn't have any car call.*

**Down peak parameters description:**


Peak hour settings - Group HH1-HH4
Up peak
Down peak
Minimum operation time for the period on automatic detection. (minutes)
15
Time base for answered down hall calls counters at each floor.
3
For each level, answered down hall calls quantity >= written value; Down peak initiated.
5
Registered down hall calls quantity >= written value; Down peak initiated.
15
Observation time interval. (minutes)
15
Peak hour detection autorisation ?
Save
Close

- Minimum operation time when automatic triggering:

As soon as a down peak period is detected, this parameter sets the minimum operation time. When that delay has expired, if the building traffic no longer requires a peak period, the group will return in Normal mode.

- Time base for answered down hall calls counters at each floor (minutes):

  This parameter sets up the observation time interval of each answered down call counters at each floor.

- When the time interval has expired, the counters are reset and the cycle restarts (see next parameter).

- For each level, the number of answered down hall calls >= to the entered value; down peak

  The dispatcher counts answered down calls for each level. If one of the counters becomes equal or higher to the entered value, a down peak period will be triggered.

  The counters are reset each time the time interval base for answered down hall calls has expired.

  *Example:*

  *If 5 down calls at floor 6 are answered in 3 minutes, a down peak period will be triggered.*

  *The dispatcher will park the elevators as followed:*

  *Priority 1 level 6*

  *Priority 2 level 7*

  *Priority 3 level 5*

  *For the down peak operation time*

- Registered number of down hall calls >= entered value; down peak

  The dispatcher counts the number of down hall calls registered in the building during the observation time.

  If the counted value reaches the entered value, a down peak period is triggered.

  The dispatcher will distribute parking priorities in order to place the cars in an escalator position.

- Observation time interval (minutes):

  This parameter represents the allowed time interval to the different counters to reach the peak periods triggering thresholds.

  When the entered value has expired, the counters are reset and the cycle restarts.

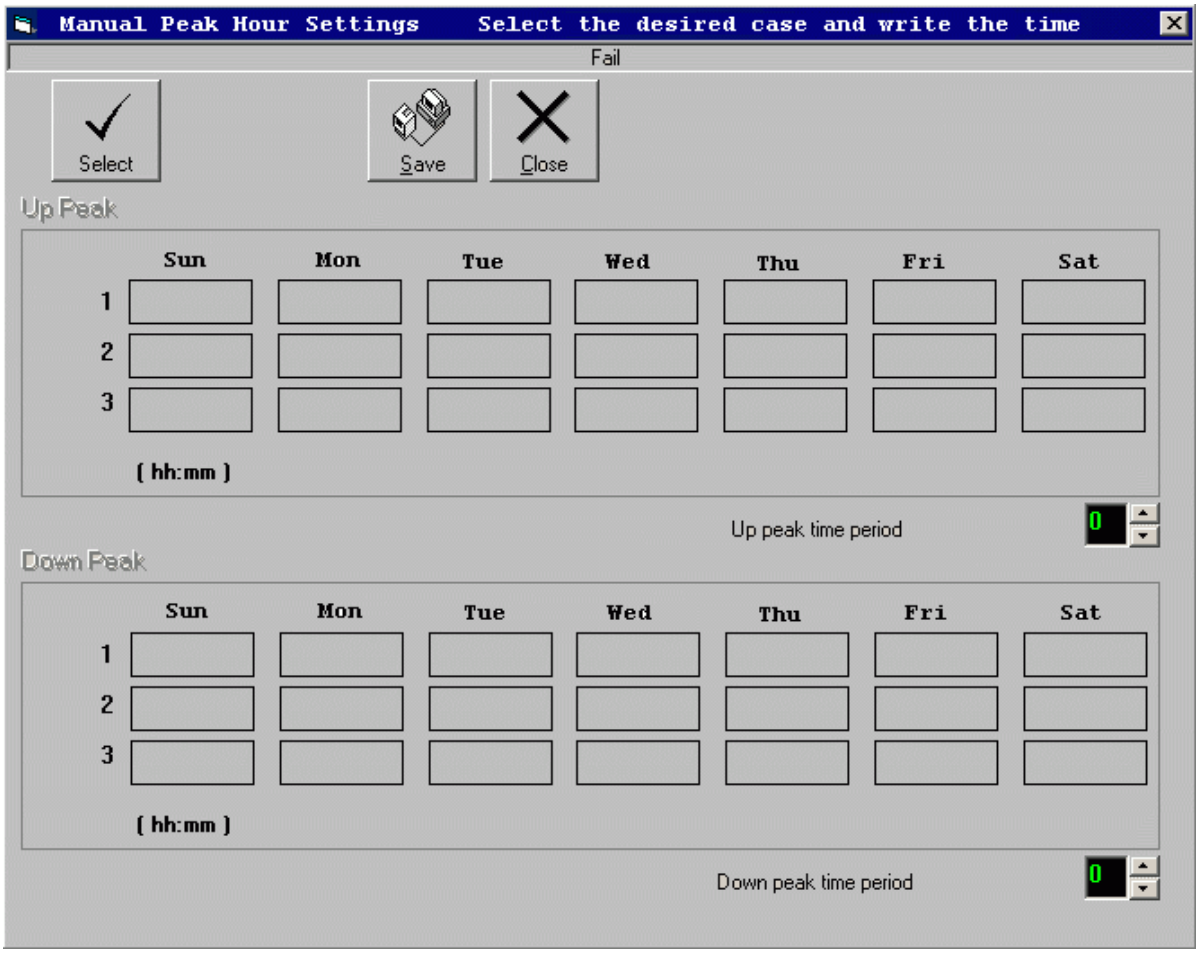
- Automatic triggering authorization:

  To authorize the dispatcher to trigger automatically peak periods, put a check mark in the small square on the right.

  Move the mouse cursor on the right square and click to make appear the check mark and click another time to remove it.

  ***Don't forget to save before leaving the window.***

**Peak hours manual triggering:**




For the manual peak hour control, two-time grids available. They can be used, to enter every day of the week, three peak activation times. The first grid regards up peaks, where as the second grid regards down peaks.

- Operation:

  The grey time slots represent unused periods. The white ones contain the peak period starting times.

- Selection of the time slots to enter a triggering time:

Move the mouse cursor on the button showing a check mark "SELECTION" and press on the left mouse button. At this moment, the mouse cursor becomes a check mark.

Move the mouse cursor on grey time slot that corresponds to the desired time of day and click on the left mouse button. The time slot will become white and empty. Repeat this operation for each desired slot.

If you press on the left mouse button on a white slot, it will become grey.

When the selection is done, place the mouse cursor on the "SELECTION" button and press on the left mouse button to come back to the normal cursor.

- Entering a triggering hour:

  Move the mouse cursor on a white slot and press on the left mouse button to be able to modify the hour.

  The "COPY / PASTE" option is possible (right mouse button).

- Peak period operation time modification:

  There are 21 possibilities for the triggering of an up peak period and the same for the down peak period. The operation time is the same for all 21 possibilities.

  Move the mouse cursor over the up or down arrows on the right of the black case showing the actual operation time.

  The number increases or decreases each time you click on the left mouse button.

- Saving of the grids:

  Move the mouse cursor on the "SAVE" button and press on the left mouse button. A "SUCCESS" message should appear. If not, save again.

  To exit the window without transferring the grids to the dispatcher, move the mouse cursor on the "CLOSE" button.

## 6. OPERATION PRINCIPLE FOR CAR ZONING AND LEVELING:

### 6.1. WITH A STANDARD TAPE SELECTOR (ZONING BY MAGNET PULSES): (IP8300 BIN4 W10):

**150 ft/min and less:**

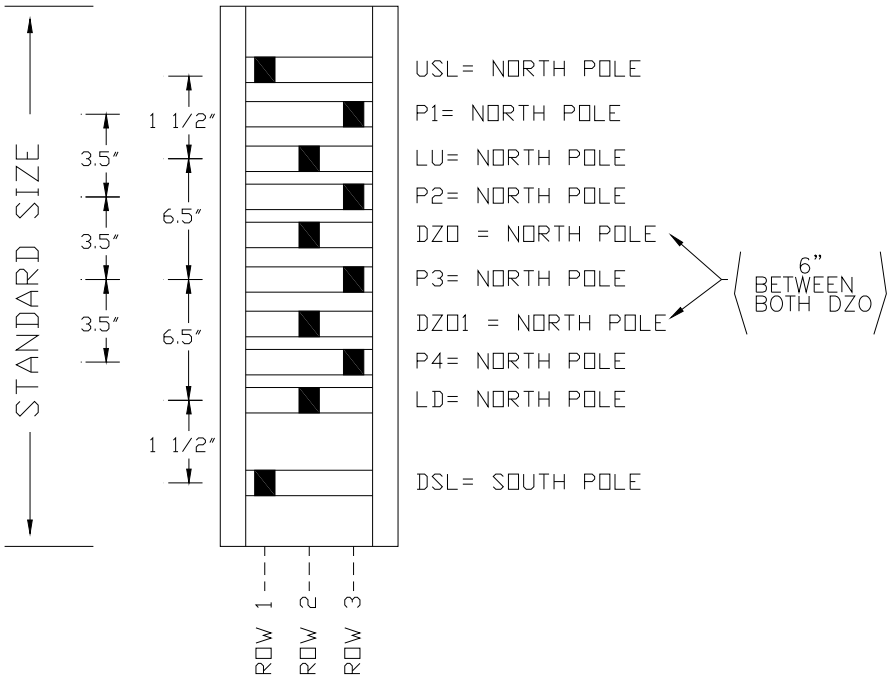
The steel tape is installed in the hoistway and is composed of three rows of magnets; one to control the slowdown, one for the elevator position autocorrecting barcode, and the last one for door zone and levelling. The sensing head is located on the car and has three rows of sensors that are sensible to "North" or "South" magnets. A USL sensor (North) detects the magnets for the up slowdown. The DSL sensor (South) detects the magnets for the down slowdown. Four other sensors (North) detects the center row of magnets: LU sensor for up levelling, LD sensor for down levelling and DZO-DZO1 sensors for door zoning. There are four or five other sensors (North) P1 to P5 that detect the row of magnets for the barcode.

The sensors can be moved inside the sensing head to facilitate the adjustment of the car positioning. For example, in order to achieve the best possible levelling adjustment, it is better and easier to move the LU and LD sensors than to cut off the magnet on the steel tape.

The USL sensor (UP slowdown) and the DSL sensor (DOWN slowdown) engage a slowdown. A ratio of 6" for each 25ft/min allows calculating the ideal distance for a good slowdown and also gives the location of the magnets.

*Example:*

*125 FPM X 6 in = 30 in*
*25 FPM*



In order to place the magnets in the correct position on the steel tape, it is recommended to bring the car at the exact position where the command has to be energized when choosing an intermediate floor.

- Levelling magnets (12" magnet): Bring the car even with the floor. Place the magnet on the steel tape so that the DZO sensor is energized but not LU and LD sensors (between LU and LD). The use of two DZO sensors gives the redundancy for the door zone.

- Up slowdown (north USL magnet): For example with a 100'/min speed elevator: bring the car exactly 24" below the landing floor and place the magnet on the steel tape, in order that the bottom end of the magnet energizes the USL sensor.

- Down slowdown (south DSL magnet): For example with a 125'/min speed elevator: bring the car exactly 30" above the landing floor and place the magnet on the steel tape, in order that the top of the magnet energizes the DSL sensor.

- Magnets installation for the binary code. Note: it is very important that the magnets are glued and centered according to the sensors.

| | Required magnets for the binary code | | | | | | |
|---|---|---|---|---|---|---|---|
| Binary code / Floor | P1 | P2 | P3 | P4 | P5 | Nbr. | Longueur (pouces) |
| 1 | • | | | | | 1 | 3 |
| 2 | | • | | | | 1 | 3 |
| 3 | • | • | | | | 2 | 3 |
| 4 | | | • | | | 1 | 3 |
| 5 | • | | • | | | 2 | 3 |
| 6 | | • | • | | | 2 | 3 |
| 7 | • | • | • | | | 3 | 3 |
| 8 | | | | • | | 1 | 3 |
| 9 | • | | | • | | 2 | 3 |
| 10 | | • | | • | | 2 | 3 |
| 11 | • | • | | • | | 3 | 3 |
| 12 | | | • | • | | 2 | 3 |
| 13 | • | | • | • | | 3 | 3 |
| 14 | | • | • | • | | 3 | 3 |
| 15 | • | • | • | • | | 4 | 3 |
| 16 | | | | | • | 1 | 3 |
| 17 | • | | | | • | 2 | 3 |
| 18 | | • | | | • | 2 | 3 |
| 19 | • | • | | | • | 3 | 3 |
| 20 | | | • | | • | 2 | 3 |
| 21 | • | | • | | • | 3 | 3 |
| 22 | | • | • | | • | 3 | 3 |
| 23 | • | • | • | | • | 4 | 3 |
| 24 | | | | • | • | 2 | 3 |
| 25 | • | | | • | • | 3 | 3 |
| 26 | | • | | • | • | 3 | 3 |
| 27 | • | • | | • | • | 4 | 3 |
| 28 | | | • | • | • | 3 | 3 |
| 29 | • | | • | • | • | 4 | 3 |
| 30 | | • | • | • | • | 4 | 3 |
| 31 | • | • | • | • | • | 5 | 3 |

***•: Sensor should be activated + red DEL in the junction box***

***P1, P2, P3, P4, P5 = sensors located in the tape selector.***

***"North" magnets need to be used. The binary code is only validated when sensors are on and the elevator is centered to the floor (DZO = ON, LU = OFF, LD = OFF). These magnets allow correcting the elevator's position, so it is important that the magnets have the right position.***

***WARNING***

***For group or duplex, if the elevator does not go to precise floors, the binary shall not be used.***

***Example: Car calls to the elevator B start from the third floor, 3Z. Thus, the binary code starts at level 3, where only P1 and P2 are activated; the binary code of the first and second floors must not be used.***

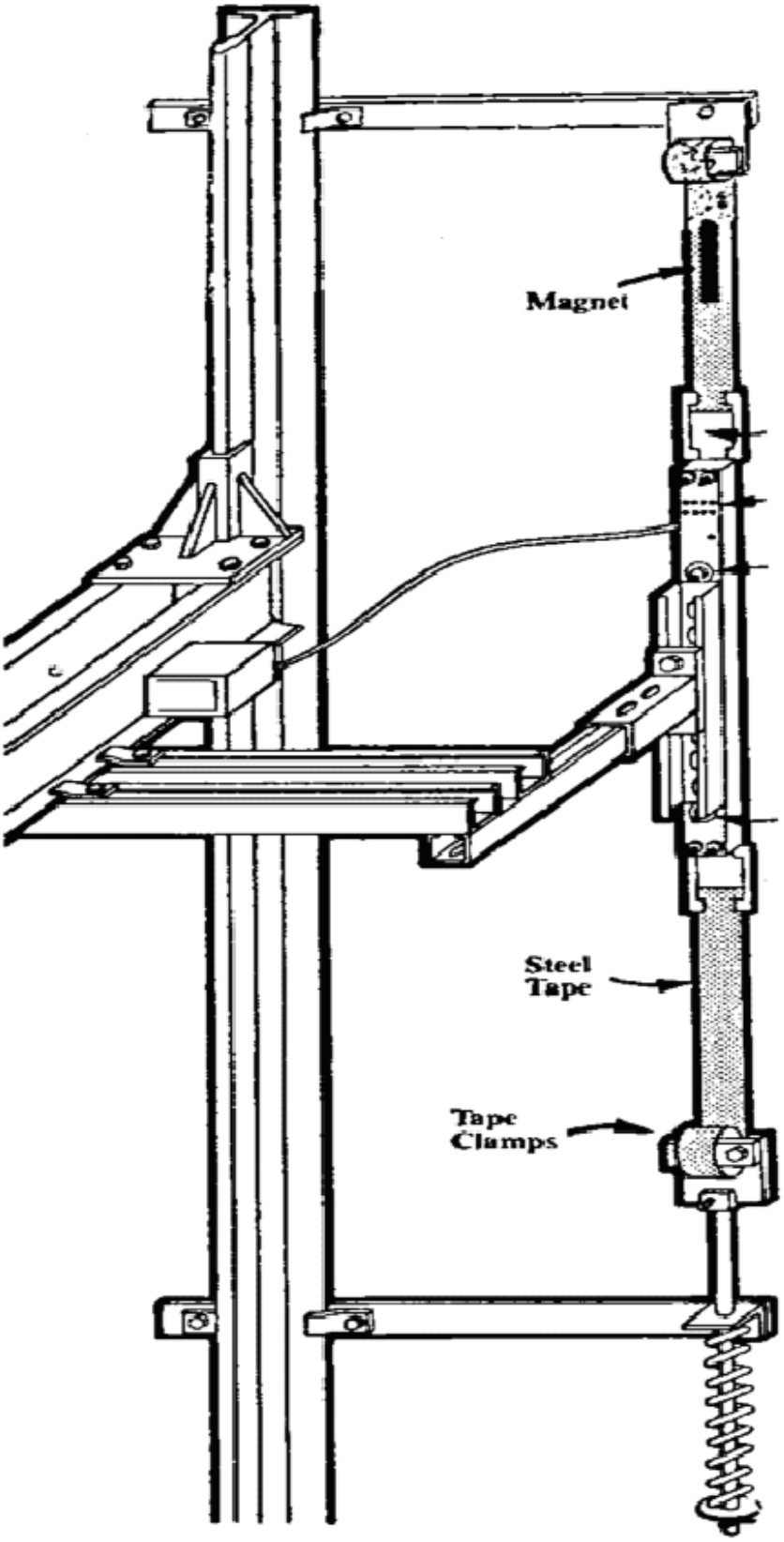
For the positioning of the magnets at the other floors, proceed as mentioned above or as followed:

- Start by placing the 12" magnet (leveller) by proceeding as described previously at the first step and binary code magnets.

- Then, proceed to the other floors. Place the USL and DSL magnets on the basis of the measurements between the USL and DSL magnets according to the 12" magnet of the first floor as described previously at the second and third steps.

***It is strongly recommended not to stick the magnets immediately to the steel tape. If a mistake should happen in the positioning, it would still be easy to move the magnets on the tape. Wait until you have made successful tests before sticking definitely the magnets to the tape.***

***Standard tape selector installation:***

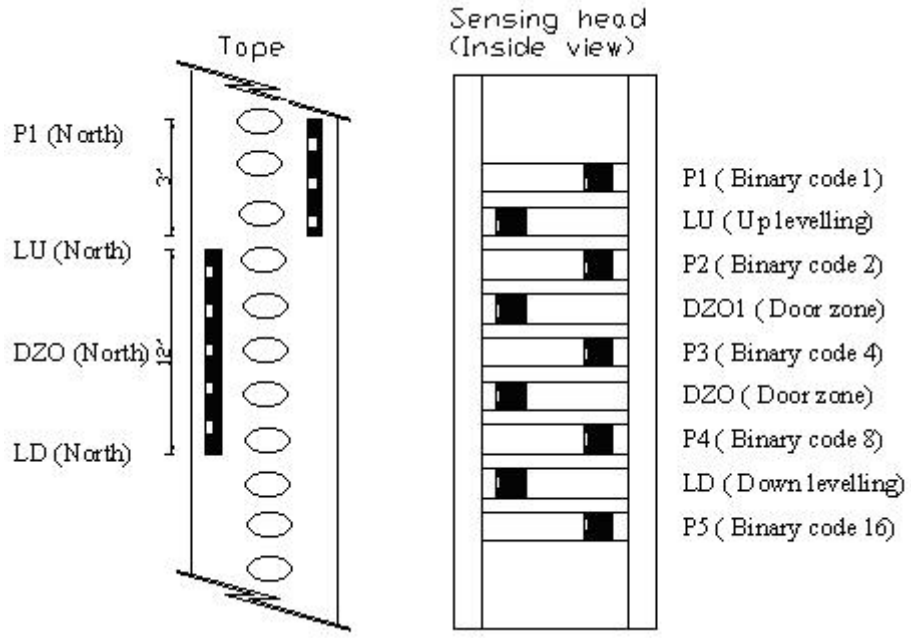


## 6.2. USING A PERFORATED TAPE OR AN ENCODER ON THE GOVERNOR:

### 6.2.1. Installation of the perforated tape:

There are no magnets on the tape for the position control and the slowdown activation. The holes counted on the tape control the sequences. The tape has 16 holes per foot. The installer only needs to specify how many holes the elevator needs to get to the floor and to start the slowdowns. This number of holes is the same for each floor.

To indicate the positions of the door zone and the levelling, a magnet must be installed on each floor on the left side of the tape. The first requirement is to install magnets at each floor.

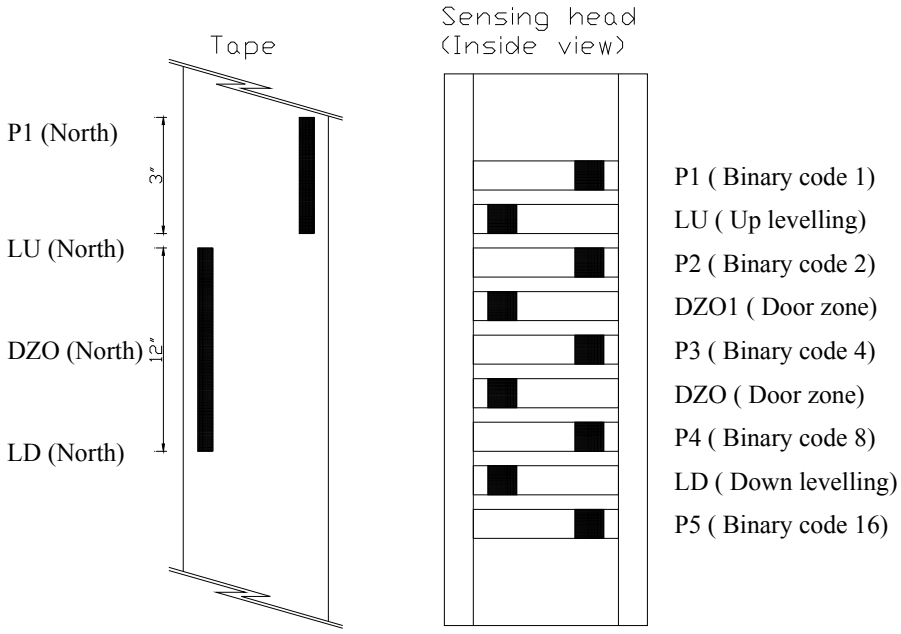



### 6.2.2. Installation of the standard tape selector and the governor encoder:

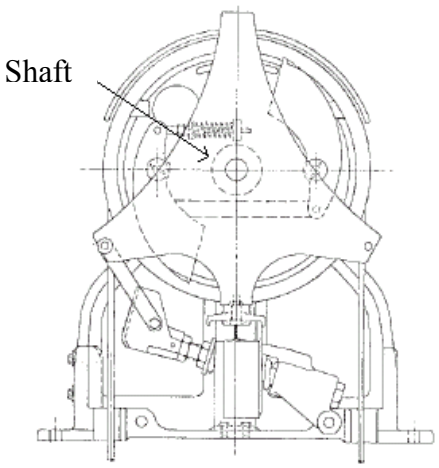
There are no magnets on the tape to control the zones and to start the decelerations; the encoder pulses control those sequences. The encoder has 50 pulses per turn when it is installed at the center of the 12 inches governor's wheel or 70 pulses per turn on 16 inches governor's, which corresponds to the same resolution as the perforated tape (3/16"). The installer only has to specify the number of pulses before reaching a floor to start the decelerations. This same number of pulses will be used for each floor.

**Tape selector:**

It is necessary to install a magnet at each floor, on the left of the tape, to indicate the position of the door zone and of the levelling device. First of all it is important to begin by placing these magnets at each floor.




**Governor encoder:**




**Connection:**

- Turn off the power and install the encoder on the shaft located in the center of the encoder.
- Once this is done, use the same pipeline as the governor's dry contact to pass the encoder wire provided with the controller.
- Connect the wires between terminals HT1, HT2, +24 and COM (see drawings).

### 6.2.3. Installation of the "Door Zone" and bar code magnets at each floor:

The tape reader on the top of the car, in addition to the 2 door zones sensors, has 4 or 5 sensors that let you confirm the exact floor at each stop.

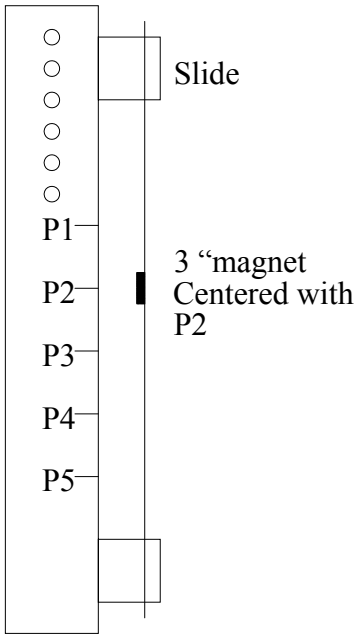
Place the car exactly at the same level than the floor. Place the magnets on the tape so that the DZO and DZO1 are activated but not LU and LD, this means centered between LU and LD. If the controller was supplied with the magnet guide (IP1200-TP1), see the following point for the car positioning.

The table here under explains how to install the magnets and contains a table for a bar code up to 31 floors.

| | Magnets required for binary code | | | | | | |
|---|---|---|---|---|---|---|---|
| Binary code / Level | P1 | P2 | P3 | P4 | P5 | Nbr. | Length (inches) |
| 1 | • | | | | | 1 | 3 |
| 2 | | • | | | | 1 | 3 |
| 3 | • | • | | | | 2 | 3 |
| 4 | | | • | | | 1 | 3 |
| 5 | • | | • | | | 2 | 3 |
| 6 | | • | • | | | 2 | 3 |
| 7 | • | • | • | | | 3 | 3 |
| 8 | | | | • | | 1 | 3 |
| 9 | • | | | • | | 2 | 3 |
| 10 | | • | | • | | 2 | 3 |
| 11 | • | • | | • | | 3 | 3 |
| 12 | | | • | • | | 2 | 3 |
| 13 | • | | • | • | | 3 | 3 |
| 14 | | • | • | • | | 3 | 3 |
| 15 | • | • | • | • | | 4 | 3 |
| 16 | | | | | • | 1 | 3 |
| 17 | • | | | | • | 2 | 3 |
| 18 | | • | | | • | 2 | 3 |
| 19 | • | • | | | • | 3 | 3 |
| 20 | | | • | | • | 2 | 3 |
| 21 | • | | • | | • | 3 | 3 |
| 22 | | • | • | | • | 3 | 3 |
| 23 | • | • | • | | • | 4 | 3 |
| 24 | | | | • | • | 2 | 3 |
| 25 | • | | | • | • | 3 | 3 |
| 26 | | • | | • | • | 3 | 3 |
| 27 | • | • | | • | • | 4 | 3 |
| 28 | | | • | • | • | 3 | 3 |
| 29 | • | | • | • | • | 4 | 3 |
| 30 | | • | • | • | • | 4 | 3 |
| 31 | • | • | • | • | • | 5 | 3 |

•: Détectors should be activated as well as the DELs in the junction box.

Example: 2nd floor




The bar code is a protection since the B44-00 code.

***P1, P2, P3, P4, P5 = sensors located in the tape selector.***

***North magnets need to be used. The binary code is only validated when sensors are switched on and the elevator is centered to the floor (DZO = ON, LU = OFF, LD = OFF). These magnets allow correcting the elevator's position. The right position of these magnets is important.***

***WARNING***

***For group or triplex, if the elevator does not go to the lower floors, the bar code will have to start at the same level than the car calls.***

***Example: Car calls to the elevator B start from the third floor, 3Z. The bar code starts at level 3, where only P1 and P2 are activated.***

### 6.2.4. Magnets installation with IP1200-TP1 guide:

Automatisation JRT inc. has developed a guide that allows you to locate rapidly the magnets of the doors zones (DZO) and the magnets of the binaries codes (P1 to P5).

**Procedure:**

- Position the elevator even to the floor.
- Position the row guide as shown in figure 1.
- Lower the car and position the magnet guide supplied as in figure 2.
- Position the JRT template under the magnet as in figure 3.
- Stick the magnet DZO in the reserved space of the JRT template.
- Stick the magnets P1 to P5 for the binary code according to the selected floor, the template indicates which magnet to stick according to the selected floor. Example: for the 1st floor, only the magnet P1 has to be stuck. For the 3rd floor, the magnets P1 and P2 must be stuck.

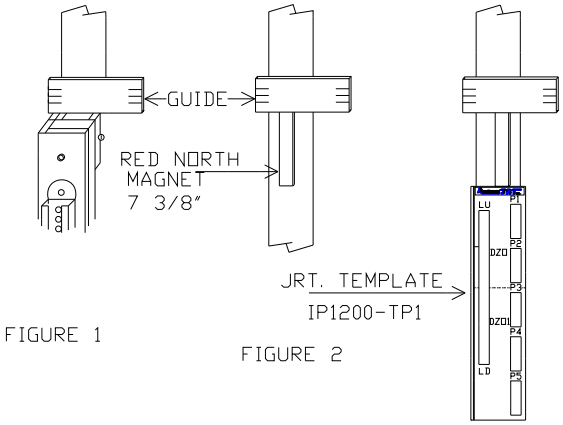



FIGURE 1

FIGURE 2

FIGURE 3

### 6.2.5. High speed counter verification:

Before recording the floors position, the high-speed counter has to count in the right way.

**To monitor the value from the LCD screen, do as the following (To monitor the value from the PLC with the programming tool, see section 1):**

- Press "ESC" and on the "UP/DOWN" keys to select "Registers access".
- Presses "ENTER".
- Choose "DM" for the register type.
- Press "ENTER"
- Press on the "LEFT/RIGHT" keys and "UP/DOWN" to enter 5800.
- Press "ENTER".

***Note: DM5800 is the lower part and DM5801 is the higher part, example: 52 000, DM5801 = 0005 and DM5800 = 2000.***

| 0 ----------> | | 10 000 000 | |
|---|---|---|---|
| 0000 | 0000 | 1000 | 0000 |
| DM 5801 | DM 5800 | DM 5801 | DM 5800 |

Activate the PCH signal to make the car go up in inspection mode. The value must increase. If not, invert the HT1 and HT2 signals.

### 6.2.6. Recording of floors position:

- Make sure that the 12" magnets (door zone) are correctly installed on each floor. Refer to section 6.2.1.
- The controller has to be in "inspection" mode.
- Lower the car to the bottom landing so that the normal down limit (LNB) and LU sensor are activated. At this time, the car must be a little lower than the level of the bottom landing.

  **With the LCD screen, do the following:**

  - Press "ESC" and on the "UP/DOWN" keys to choose "Recording floor position".
  - Press "ENTER".
  - Press "UP".
  - Press "ENTER".

- At this time, the led "LED4" is blinking on the LCD board. To interrupt the learning process at any time, put the elevator in normal mode for a few moments.

- Move the car up in inspection speed until the normal up limit (LNH) is activated.

  **With control inspection:**

  Set bypass switches doors and car to the « STOP » position.

  To move in inspection control: Put a jumper connection between terminals « +A » and « ISR ». Set the inspection switch to the position «INSPECTION». Press the «UP» button from the card « JRT-INT-02 » to move the lift. After 3 seconds, the controller maintains automatically the rise of the elevator. Press «DOWN» to cancel.

  **With car top inspection:**

  Do not connect the terminal « ISR ». The indicator for « ISR » must be at OFF. Put a jumper between terminals « +A» and «PCH».

  ***Make sure that the normal down limit (LNB) is disengaged before LU (up levelling). LNB input on the PLC must be on before the "LU" input is turned off.***

  The LCD screen allows to follow the learning floor positions. It increases by 1 each time a floor position is memorized. Therefore, at the end of the learning position the register is supposed to show the number of floors. If the elevator stops at the top floor and the output of the PLC is still blinking, this means that one or more floors have not been recorded. Verify the normal limits at the top and the bottom, and redo the record.

  If all the floors have been recorded and that the output is no longer blinking, the position of each floor, in number of pulses from the bottom to top, is recorded in the processor.

  Run the car in inspection mode. The position indicator will increase or decrease according to the position of the car, if the number of holes for slowdown has been entered as described in section 6.2.7.

  If the indicator does not seem to operate correctly, repeat this procedure.

  At this time, the elevator is ready for operation in "automatic" mode. The perforated tape or the governor encoder programming completed.

### 6.2.7. Programming the number of holes for slowdown:

The recommended distance for correct slowdown before arrival at a given floor is 6 in per 25 FPM.

*Example:*

$$\frac{200\ FPM \times 6\ in}{25\ FPM} = 48\ in$$

*Tape or the encoder have 16 holes/ft = 1 hole/0.75 in*

$$\text{Therefore: } \frac{48\ in}{0.75} = 64\ holes$$

**Slow down distance table:**

- 100 FPM = 24 in = 32 holes
- 150 FPM = 36 in = 48 holes
- 200 FPM = 48 in = 64 holes
- 250 FPM = 60 in = 80 holes
- 300 FPM = 72 in = 96 holes
- 350 FPM = 84 in = 112 holes
- 400 FPM = 96 in = 128 holes

**Elevators reaching the contractual speed between each level (Elevators 250 FPM and less):**

Enter the number of holes for slowdown before arrival at a floor in DM132.

**Elevators with a floor to floor speed and a two floors speed and more (Elevators 250 FPM and more):**

Enter the number of holes for slowdown before arrival at a floor:

- DM132: for a "one floor run".
- DM133: for high speed.

**To modify the value with the LCD included in the controller (To mofidy the value with the programming tool, see section 2):**

- Press "ESC" and the "UP/DOWN" keys to choose "Registers access".
- Press "ENTER".
- Choose "DM" for the type of register.
- Press "ENTER".

- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter 132.
- Press "ENTER"
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter the number of desired holes (example: 91=0091).
- Press "ENTER".

***The number of holes can be changed at any time when the car is stopped.***

## 6.3. VERIFICATION OF THE HIGH SPEED COUNTER (COUNT LOSS):

The PLC register DM490 shows the actual elevator position in holes from the LNB limit switch.

At each floor stop, the recorded floor position is downloaded in the high-speed counter.

**Count loss**

When the elevator stops at the floor, observe the value that will be in the register after 2 seconds.

If the value changes for more than 2 counts, it may indicate a count loss or that the recorded floor position is incorrect.

Record the entire floor positions another time and if the problem is still present, verify HT1 and HT2 shield. Cleaning the tape reader can solve the count loss problem.

Day light or high power lights generate infrared rays that can affect the perforated tape high-speed counter.

## 6.4. DETECTING FLOORS HAVING A PROBLEM WITH THE BAR CODE MAGNETS:

Elevator controllers memorizes which floors were corrected by the bar code reader. It keeps in its memory the last 10 levels that were modified.

This tool can be very useful to locate at which floor a problem occurs.

**Example of a problem with a magnet at the 18Z:**

| | **Level at which the car stops to answer a call (Bz, 2z, 3z…)** | | **Level confirmed by the bar code reader (P1, P2, P3, P4, P5)** |
|---|---|---|---|
| DM2960 | 18 Z | DM2970 | 16 Z |
| DM2961 | 20 Z | DM2971 | 22 Z |
| DM2962 | 18 Z | DM2972 | 16 Z |
| DM2963 | 15 Z | DM2973 | 17 Z |
| DM2964 | 18 Z | DM2974 | 16 Z |
| DM2965 | 13 Z | DM2975 | 15Z |
| DM2966 | 0 | DM2976 | 0 |
| DM2967 | 0 | DM2977 | 0 |

| | Level at which the car stops to answer a call (Bz, 2z, 3z…) | | Level confirmed by the bar code reader (P1, P2, P3, P4, P5) |
|---|---|---|---|
| DM2968 | 0 | DM2978 | 0 |
| DM2969 | 0 | DM2979 | 0 |

In that example, each time the elevator stops at the 18Z, the bar code reader corrects the position to 16Z. When the elevator will travel to another floor, the bar code reader will readjust the position by two floors.

If you look closely at the binary code (P1…P5) of the 18Z and of the 16Z (see previous page), you will see that the "P2" sensor at the 18Z is missing.

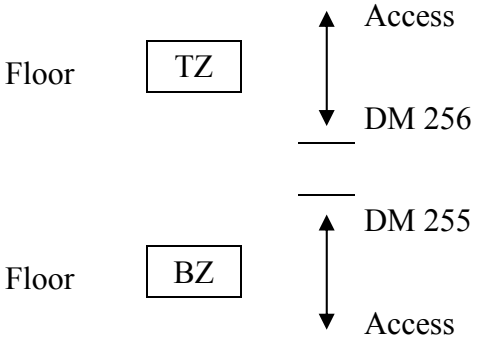
Move the elevator in inspection mode to the 18Z and correct the error with the sensor or the misplaced magnet. Once the error is corrected, erase the list in its entirety by following the steps described below.

**Write 1234 in theDM2940 to clear bar code errors buffer:**

**Using the LCD (to modify the value with the programming tool, see section 1):**

- Press "ESC" and the "UP/DOWN" keys to choose "Registers access".
- Press "ENTER".
- Choose "DM" for the type of register.
- Press "ENTER".
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter 2940.
- Press "ENTER"
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter 1234
- Press "ENTER".

## 6.5. HOISTWAY ACCESS TRAVEL ADJUSTMENT:



The controller allows limiting the hoistway access of travel to the bottom and top floors, avoiding the installation of mechanical limits

DM 255: Number of holes or pulses limiting the travel zone at bottom floor of the building. (16 holes or pulses/ft)

DM 256: Number of holes or pulses limiting the travel zone at the top floor of the building. (16 holes or pulses/ft)

*Example:*

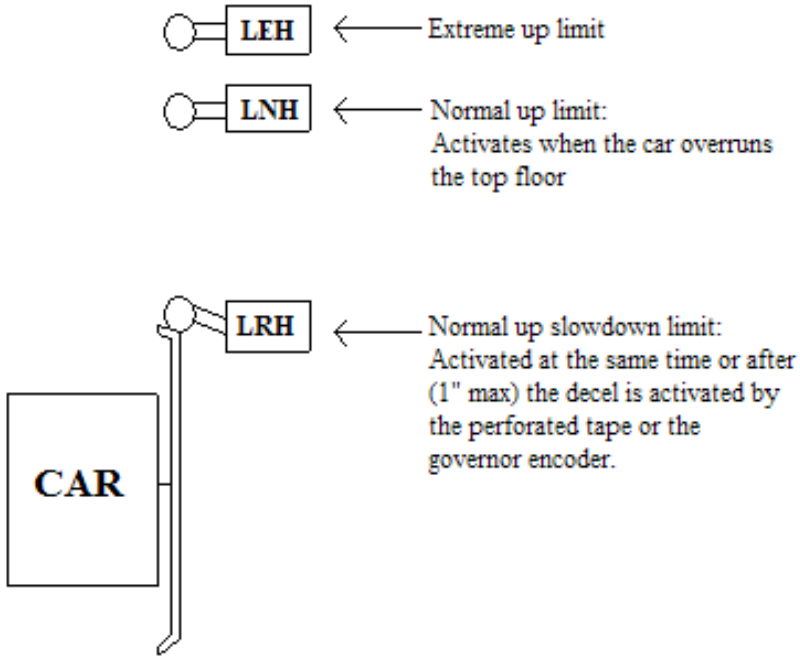
**Using the LCD (to modify the value with the programming tool, see section 1):**

- Press "ESC" and the "UP/DOWN" keys to select "Registers access".
- Press "ENTER".
- Choose "DM" for the register type
- Press "ENTER"
- Press on the "LEFT/RIGHT" and "UP/DOWN" keys to enter 0255.
- Press "ENTER".
- Press "ENTER" to modify the value. Enter the new value and press "ENTER" to save the modification.

# 7. SLOWDOWN NORMAL LIMITS ADJUSTMENT AND EMERGENCY TERMINAL STOPPING DEVICE SYSTEM FOR TOP AND BOTTOM FLOORS:

## 7.1. END OF TRAVEL LIMIT SWITCHES INSTALLATION:

### 7.1.1. With standard tape selector (elevator of 150 FPM and less):



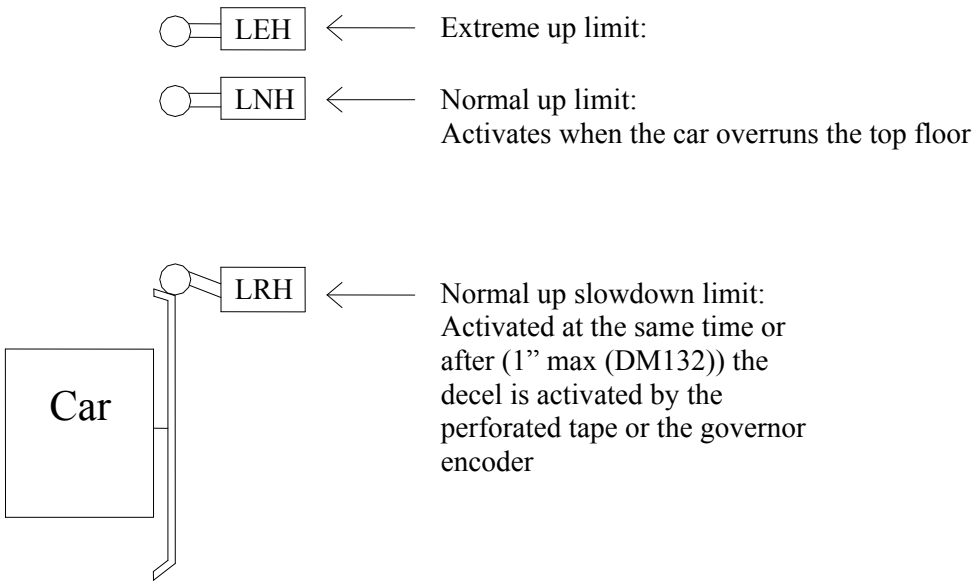

The same corresponding limit switches are found at the bottom floor: LRB, LNB and LEB. Down normal slowdown limit switch "LRB" must be activated at the same time or slightly after (max 1 inch of travel) as soon as the magnet activates the "DSL" sensor. The down normal limit switch "LNB" is activated as soon as the car goes slightly lower than the bottom floor.

***Always make sure that the decelerations are engaged by the magnets, and not by the slowdown limit switches "LRH" or "LRB".***

***Always make sure that normal stops at top and bottom floors are not done by the normal limits "LNH" or "LNB".***

### 7.1.2. With a perforated tape or a governor encoder (elevator of 150 FPM and less):

The elevator must be adjusted before the final adjustments of the normal slowdown limits. There are two ways to adjust the slowdown limits. The first one is by measuring and the second one is with the DM490, which is the car position in holes.


LEH
Extreme up limit:
LNH
Normal up limit:
Activates when the car overruns the top floor
LRH
Normal up slowdown limit:
Activated at the same time or after (1" max (DM132)) the decel is activated by the perforated tape or the governor encoder
Car

**1st way:**

- If the number of holes or pulses entered in DM132 for slowdown is 82: 82 x 0,75in = 61½ in

  Therefore, the limits should engage slightly closer to the final terminal landing that is, approximately 61 inches before arrival.

**2nd way:**

- LRH adjustment: Place the car to the top terminal landing equal to the floor (DZO activated, LU and LD deactivated). Note the quantity of holes or pulses in DM490 (ex. 500 holes or pulses). Take the value and subtract it from DM132 (ex: 82 holes or pulses) Add one hole to the result and this will give the position of the normal slowdown limit "LRH".

  **To see DM 490, use the LCD:**

  - Press "ESC" and on the "UP/DOWN" keys to select "Register access".
  - Press "ENTER".
  - Choose "DM" for the type of register.
  - Press "ENTER".
  - Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter 0014.
  - Press "ENTER".

*Example:*

*500 holes or pulses (top floor position in DM490)*
*82 holes or pulses = DM132*
*500-82 =418 holes or pulses*
*418+1hole = 419 holes or pulses, position of the slowdown limit "LRH"*

- LRB adjustment: Place the car at the bottom floor equal to the floor (DZO activated, LU, and LD deactivated). Note the quantity of holes or pulses in DM490 (ex. 10 holes or pulses). To this value, you must add DM132 and after, subtract 1. The result will give the position of the slowdown limits "LRB"

*Example:*

*10 holes or pulses (bottom floor position in DM490)*
*82 holes or pulses = DM132*
*10+82 =92 holes or pulses*
*92-1hole = 91 holes or pulses, position of the slowdown limit "LRB"*

## 7.2. CORRECTION OF SLOWDOWN LIMITS POSITION WITH PERFORATED TAPE OF GOVERNOR ENCODER:

When the elevator will have done a few runs to the extreme floors, 4 warnings of wrong limits adjustment can be displayed in the alarms.

| Warning | Description | Corresponding DM |
|---|---|---|
| HR83.14 | Wrong LRB adjustment | DM360 |
| HR83.15 | Wrong LRH adjustment | DM364 |

To correct the situation, visualize the DM corresponding to the fault. This value corresponds to the holes difference between the deceleration point and the limit's position. So, if the value of one DM=2, the elevator starts to slowdown and 3 holes further the elevator touches to the slowdown limit. DM359 corresponds to the tolerance allowed to display the warning, it's adjustable between 4 and 16 holes.

If the value is "0", the elevator touches the normal slowdown limit before or at the same time as the deceleration point. It should be lowered a little for the elevator to decelerate with the deceleration point and not with the normal slowdown limit. The elevator that touches the slowdown limit before the deceleration point will stay in leveling speed longer to this floor than to the others. A value between 1 and 3 should be in the corresponding DM for a good slowdown limit adjustment.

*Example with LRB:*

*To visualize the DM360:*

- Press "ESC" and on the "UP/DOWN" keys to select "Register access".

- Press "ENTER".

- Choose "DM" for the type of register.
- Press "ENTER".
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter 0360.
- Press "ENTER".

*10 holes or pulses (difference between the deceleration point and the limit)(12 in=16 holes (12/16=0,75))*
*10 holes or pulses *0.75=7.5 in*
*The normal slowdown limit LRB has to go up of 7 inches.*

***The number of holes difference should be between 1 and 3.***

***If the number of holes or pulses for the deceleration is changed (DM132 orDM133), the normal slowdown limits will have to be moved***

## 8. EMERGENCY BRAKE, GTS RELAY CIRCUIT AND BUFFER TEST:

If the elevator moves out of the door zone (DZO) while landing door or car door is opened (PP or PC relays disabled), the relay GTS will open and will need a manual reset. The relay GTS will open under the following conditions:

- Loss of power on "J5" security line in the controller. This could be caused by:
  - Main power loss;
  - Car safety engaged;
  - Speed governor tripped;
  - Final up limit "LEH" opened;
  - Final down limit "LEB" opened;
  - Pit switch opened
  - Redundancy detection (R5 + ETSL).

**Conditions for relay GTS reset which opens the emergency brake in case of failure:**

The controller keeps in memory the emergency brake application caused by the opening of the doors (PC and PP) outside the door zone (DZO or DZ1). The emergency brake will not be reset automatically. You must press on the manual reset button to reset the relay GTS.

If the relay GTS opened for any other reason, it will be reset automatically when there is a power failure on the PLC and that all of the emergency circuits are closed.

### 8.1. BUFFER TEST WITH PERFORATED TAPE OF ENCODER:

To do the buffer test:

- Put the elevator in Maintenance mode with the switch located inside the controller.
- Put jumpers on the slowdown limit, the emergency stop limit, the normal limit and the top or bottom extreme limit according to the test.
- Put DM94 = 1.
- Place a car call to the top or bottom floor as per the test.

***Be careful, the car will move in full speed on the buffer because the controller no longer reads the pulses on the perforated tape on the governor's encoder.***

- Then put back the car in Normal mode with the maintenance switch in normal position. DM94 will automatically be equal to 0 and the perforated tape or the governor will again be operational.

# 9. INTERNAL FUNCTIONS AND CONTROLLER CONFIGURATION:

Many functions and timers may be configured and adjusted in the elevator controller. Refer to the first section of the manual to modify the registers (DM) with the LCD and to the second section to modify them with the programming toll (PRO01).

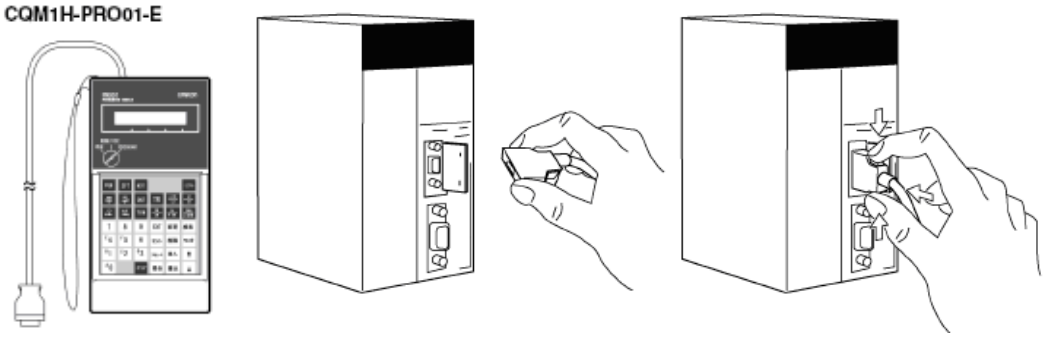
## 9.1. MODIFYING THE DM WITH THE LCD:

**With the LCD screen, follow these instructions:**

- Press "ESC" and the "UP/DOWN" keys to select "Register access".
- Press "ENTER".
- Choose "DM" for the register type.
- Press "ENTER".
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter the DM number.
- Press "ENTER".
- Press "ENTER" to modify the value.
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter the new value and press "ENTER" to save the modification.

## 9.2. MODIFYING THE DM WITH THE PROGRAMMING TOOL:

**Using the C200H-PRO27 or CQM1-PRO01-E, follow these instructions:**




**To program these functions:**

- Connect the programming console C200H-PRO27 or CQM1-PRO01-E.
- Turn the key switch to "monitor" and enter the password CLR-MONTR-3. You should read "00000" on the screen. Then follow these instructions:

| | | |
|---|---|---|
| **DM** | (DM number)<br>Example: 0074 | **MONTR** |
| | Screen= | **D0074<br>0000** |
| **CHG** | | **PRES. VAL?<br>D0074 0000 ????** |

- Enter state1 or 0:

| | |
|---|---|
| **1** | **PRES. VAL?<br>D0074 0000 0001** |
| **WRITE** | **D0074<br>0001** |

The function is now programmed.

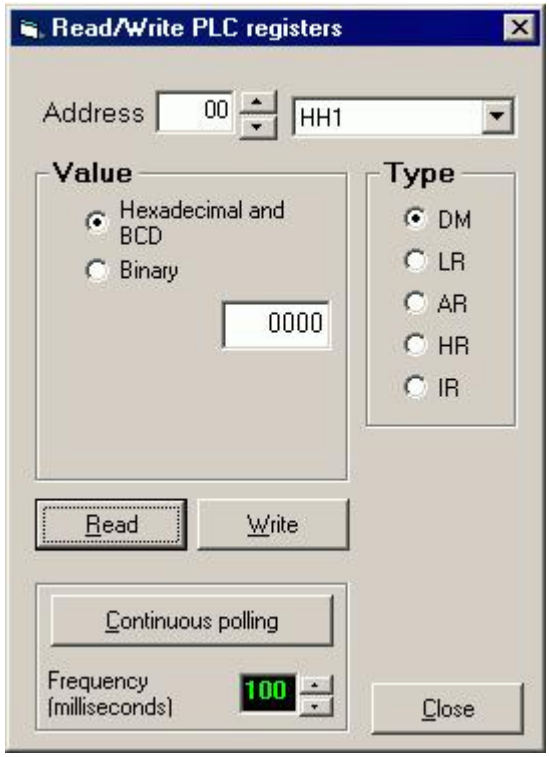
## 9.3. MODIFYING THE DM OR THE OPERATING TIME WITH THE OPERATOR SCREEN FOR THE GENERAL FUNCTIONING SECTION:

Refer to the "General Functioning" section on the computer:

With the left button, click on the icon with the 2 computers and then click on "Reading/Writing plc registers…".

The following window appears and gives access to all the network's controllers that are connected. In that window, the user can select the elevator and the register type to be modified. The user can also enter the register address to modify as well as the new value and transmit it to the controller by clicking on the button "Writing". Wait for the message "SUCCES", if not, click again on "Writing".

It is also possible to visualize the register's existing value by clicking on the button "Reading". For more information use the help function of the supervision software.



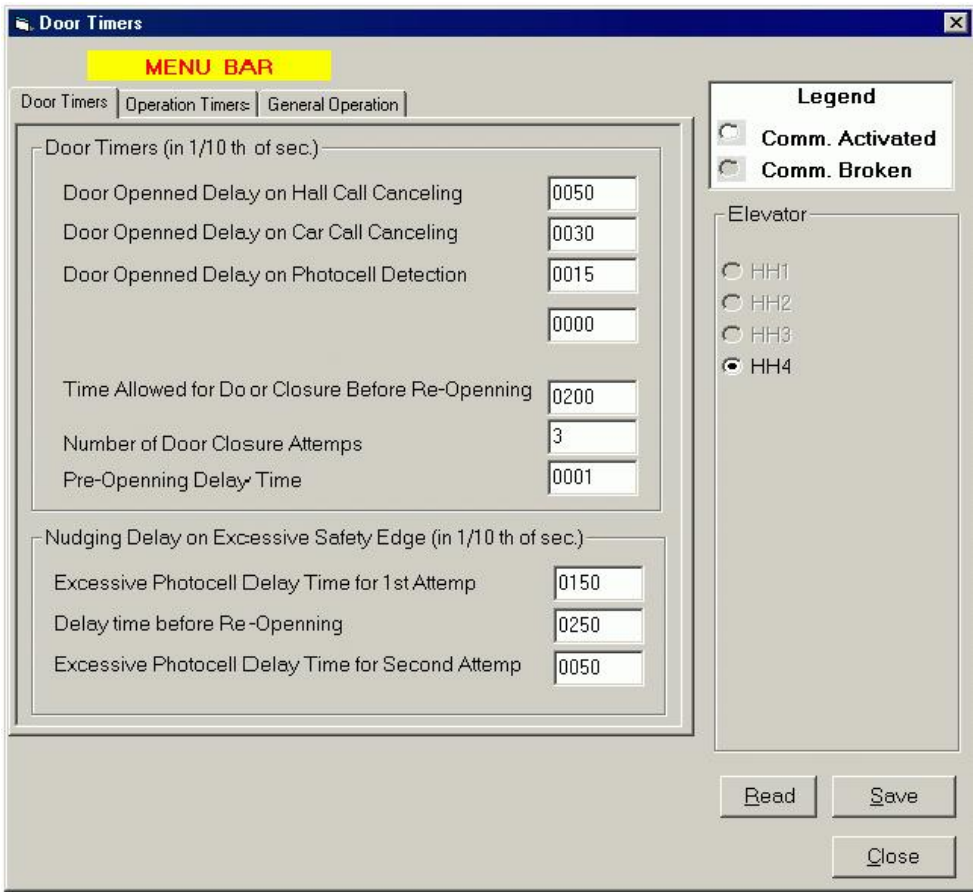

### 9.3.1. Time changing of certain timer with the screen operator:

It is possible to visualize and modify the different PLC's internal parameters for each elevator.

- Move the mouse cursor on the sine wave button and click on the left mouse button.

- Move the cursor on the line "ELEVATOR CONFIGURATION" and after 1 second, another menu will appear on the right.

- Move the cursor on "GENERAL" and press on the mouse left button.




**This window has a tool bar offering 3 possibilities to the user.**

**Selecting the parameters section to modify:**

Move the mouse cursor on the tool bar, on the text corresponding to the wanted section and press on the left mouse button. A list of the modifiable parameters will appear.

**Reading the actual content of a PLC's parameters:**

In the "Elevator" section, there is a complete list of the network elevators. The white circles indicate that the reading mode for this elevator is working. Grey circles indicate the elevator is not accessible for a distance reading (no communication).

Move the cursor on the white circle corresponding to the desired elevator and click the left mouse button. A black dot will appear.

Move the mouse cursor on the button "READ" and click on the left mouse button.

**Modifying a parameter value:**

Move the cursor on the field containing the value to modify and click on the left mouse button. Change the value using the keypad. Repeat the process for all parameters to modify.

**Saving modified parameters:**

Only the parameters in the opened window will be saved in the PLC. So, save each section one by one. Move the cursor on the button "SAVE" and click on the left mouse button. Once the transfer has been completed, the message "SUCCESS" should appear, if not, save again.

To exit the window without modifying the parameters, move the cursor on one of the buttons shown below and click on the left mouse button.

or

## 9.4. CONTROL OF DOORS:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0000 | Door open delay on hall call. Timing begins when the door is fully opened. | 0.1 sec |
| DM0001 | Door open delay on car call. Timing begins when the door is fully opened. | 0.1 sec |
| DM0002 | Door open delay on a re-opening caused by safety edge activation or light beam interruption. Timing begins when the door is fully opened. | 0.1 sec |
| DM0032 | Door closure delay beyond which the door will reopen if they are not completely closed. (Activated only if DM87=1). | 0.1 sec |
| DM0092 | Extended door open time at lobby. DM0173. (yes = 1 no = 0). | n/a |
| DM0173 | Door open delay if the 25% weight limit (LW3) is not activated. Timing begins when the door is fully opened. Activated only if DM92 = 1. The "Door close" button is not operational at the main floor if the weight limit LW3 is not reached. | 0.1 sec |
| DM0033 | Protection on closing of doors. Number of times (counter) that the doors will try to close before the elevator is out of service. Activated only if DM87 = 1 (DM33 factory set to 5). | |
| DM0034 | Door opening delay beyond which the door will re-close; for instance, if the door did not reach full opening or if the DOL limit has not been activated. This counter doesn't need to be adjusted because it is automatically according to DM0000. | 0.1 sec |
| DM0060 | FDOL / RDOL signals off delay applied when the contact opens. | 0.1 sec |
| DM0061 | FDCL / RDCL signals off delay applied when the contact opens. | 0.1 sec |
| DM0066 | Door photocell interruption delay beyond which the door will be forced to close slowly in nudging. | 0.1 sec |
| DM0067 | Delay before door re-opening during nudging, if the door cannot close completely. | 0.1 sec |
| DM0068 | Delay between the second attempts to close the door in nudging. | 0.1 sec |
| DM0077 | Door close button simulation when a new car call is registered. (Yes=1, no=0) | n/a |
| DM0035 | Delay before door closing on a new call, if DM 77 = 1 | 0.1 sec |
| DM0080 | Door pre-opening in leveling zone. (Yes = 1 no = 0) | n/a |
| DM0084 | Door nudging. (Door closing at low speed) (Yes = 1 no = 0) | n/a |
| DM0087 | Door closing protection. If the door cannot close properly, it automatically re-opens and re-closes. The door will try to close the number of times set in DM33 (5 times) and then the door will no longer close and the car will be in fault and will no longer take calls. (yes = 1 no = 0). | n/a |
| DM0088 | Delay before door opening in the door zone if pre-opening activated. | 0.1 sec |

***If there is simultaneously a stop on car call and on floor call, the floor timer will be predominant.***

## 9.5. VARIABLE SPEED DRIVE:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0008 | Too long travel protection. | 0.1sec |
| DM0017 | Time allowed for the elevator to reach the next floor if there is a problem with the perforated tape. | 0.1sec |
| DM0045 | Field magnetization delay before brake opening. | 0.1sec |
| DM0046 | Delay before the brake drops to pass from 7 ft/min to zero in leveling at a floor stop. | 0.1sec |
| DM0047 | Delay before deactivating the drive at floor stop. | 0.1sec |
| DM0049 | Car stop delay on drive fault. If the controller does not receive a drive run confirmation before the DM0049 delay, the car will be put out of order. (trouble H8206). | 0.1sec |
| DM0076 | Delay before the acceleration begins after brake opening.. | 0.1sec |
| DM0078 | Delay before releasing the motor contactor "M". The timer begins after the delay in DM 0047. | 0.1sec |
| DM0150 | Number of drive reset. | n/a |

## 9.6. BRAKE:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0044 | Delay before voltage reduction after brake pick up if there is a relay HLD. | 0.1sec |
| DM0050 | 125% brake test for room less machine. If 1111, inspection buttons to open the brake, drive is off but uncontrolled speed detection is operational. “BRK” = off. | n/a |
| DM0178 | Time allowed for brake opening at start. (fault HR 8211) | 0.1sec |
| DM0179 | Number of starts without opening of the brake. | |
| DM0180 | Time allowed for brake closing. (fault HR8211) | 0.1sec |
| DM0181 | Re-leveling counter in the door zone. After DM0181 counts, the rope gripper will be applied. (fault HR8213) | |
| DM0182 | Brake switch input installed. (Yes = 0, No =1234) | n/a |
| DM0282 | Brake switch contact NO/NC. (0 = normally closed, 1= normally opened) | 0 or 1 |

## 9.7. FLOOR CALLS:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0020 | Delay beyond which car calls and hall calls are cleared if the car has not moved to another floor. | 0.1sec |
| DM0082 | Number of car calls limited to the value stored in DM83. (Yes = 1 No = 0) | n/a |
| DM0083 | Maximum number of car calls allowed versus the amount of weight measured by the photocell (PH). | n/a |
| DM0089 | Each time the car reaches the top or bottom floor, all car calls are cancelled. (Yes =1 No = 0) | n/a |
| DM0090 | Car calls for in reverse direction not allowed. (Yes =1, No = 0) | n/a |

## 9.8. GONG:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0022 | Door opened gong time if the door is still opened. | 0.1sec |

| | | |
|---|---|---|
| DM0023 | Door opened gong time. (Manual door) | 0.1sec |
| DM0038 | Car calls acknowledgement pulse duration. (activated by DM 0086 = 1) | 0.1sec |
| DM0040 | Passing gong pulse time. | 0.1sec |
| DM0043 | Delay between 2 passing gong pulses. | 0.1sec |
| DM0081 | Passing gong activation. (Yes = 1 No = 0) | 0.1sec |
| DM0085 | Passing gong, 2 pulses in down direction. (Yes = 1 No = 0) | n/a |
| DM0086 | Car calls acknowledgement activation. (Yes =1 No = 0) | n/a |
| DM0169 | Time before turning off direction arrows if no movement. | minutes |

## 9.9. POSITION INDICATOR + SU/SD DIRECTION:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0028 | SU and SD direction will stay activated during door closing and during reopening.<br>Door opening on direction reversing, if = 1 | n/a |
| DM0039 | If = 0001, Floor designation when passing each landing<br>If = 0000, Floor designation upon arrival at each landing only | n/a |
| DM0126 | = 0000, standard indicator (one light per floor)<br>= 0001, binary indicator A, B, C, D | n/a |
| DM0160 | 0000 = No flashing code on the position indicator<br>0001 = Flashing code to indicate inspection, independent service and phase 1<br>> 2 = Flashing code on the position indicator for long time out of service | n/a |
| DM0161 | Flashing code to indicate the independent service mode | n/a |
| DM0162 | Flashing code to indicate the phase 1 mode | n/a |
| DM0163 | Flashing code to indicate the inspection mode | n/a |
| DM1301 and + | Code number that correspond to BZ (1 to 32) | n/a |

## 9.10. EMERGENCY RECALL:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0098 | Main floor recall level. | Floor |
| DM0099 | Alternate floor recall level. | Floor |
| DM0148 | Main floor door selection on phase 1. (0 = Front door, 1 = Rear door) | n/a |
| DM0149 | Alternate floor door selection on phase 1. (0 = Front door, 1 = Rear door) | n/a |
| DM0051 | On fire in the machine room FMR, if the machine room is at the same level as the main floor, put 1 in the DM. The car will move to the alternate floor. | n/a |
| DM0056 | On fire in hoistway FH, if the elevator must go to the main floor, put 0 in the DM and put 1 if the car has to move to the alternate floor. | n/a |
| DM0151 | Fire buzzer turn off delay | 0.1sec |
| DM0152 | Fire signals reversing FS, ALT, FH, FMR (1234 = inputs deactivated initialize the fire sequence, 0000 = inputs activated initialize the fire sequence) | n/a |
| DM0153 | ALT signal delay (0 to 1.0 sec.) If = 1234, this fire signal is not used | 0.1sec |
| DM0154 | FMR signal delay (0 to 1.0 sec.) If = 1234, this fire signal is not used | 0.1sec |
| DM0155 | FH signal delay (0 to 1.0 sec.) If =1234, this fire signal is not used | 0.1sec |

## 9.11. EMERGENCY POWER OPERATION:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0091 | Max. speed, (2 floors and +) allowed on emergency power. (Yes = 0 no = 1) | n/a |
| DM0285 | GEN1 and GEN2 signals reversing on normal power. (0 = N.O. 1= N.C). | n/a |
| DM0405 | Number of elevators to control during emergency power operation. | n/a |
| DM3100 | 1st elevator of the group to return the main floor. | n/a |
| DM3101… | 2nd elevator of the group to return the main floor. | n/a |
| DM3110 | 1st elevator of the group that returns in automatic mode after all elevators are at the main floor. With the separate dispatcher, the CJ1M IO uses the same registers. | n/a |
| DM3111… | 2nd elevator of the group that returns in automatic mode after all elevators are at the main floor if the first one before is faulty. With the separate dispatcher, the CJ1M IO uses the same registers. | n/a |

## 9.12. PRIORITY SERVICE (BLUE CODE AND FREE CAR):

| REGISTRE | DESCRIPTION | UNITÉ |
|---|---|---|
| DM1412 | Blue code reset timer if no movement was detected. ( protection ) | 0.1sec |
| DM1413 | Blue code, time allowed to turn the key inside the car before returning to automatic operation. | 0.1sec |
| DM1421 | Free car, operation buzzer off delay when arriving at the hall call level. | 0.1sec |
| DM1422 | Free car, delay before car call acceptance when arriving at the floor, door opens. | 0.1sec |
| DM1423 | Free car, delay before returning to automatic operation if no car calls entered. | 0.1sec |
| DM1425 | Free car, final delay upon arrived at destination. After that delay, the car returns in automatic. | 0.1sec |

## 9.13. POSITIONNING/SPEED/BOTTOM SWITCHES:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM 0029 | Disables the sensors of code bar (P1, P2, P3, etc.) (Disable = 1234 Activated = 0) | n/a |
| DM 0094 | Buffer test sequence allowed in maintenance. (1= Activated) | n/a |
| DM 0132 | Hole number for deceleration distance for one floor run rides. (posi1000, position indicator level switching distance) | Holes |
| DM 0133 | Hole number for deceleration distance for two floor run rides and more. | Holes |
| DM 0255 | Bottom hoist way access zone distance (0.75’’/ hole). | Holes |
| DM 0256 | Top hoist way access zone distance (0.75’’/ hole). | Holes |
| DM 0290 | Actual elevator speed. | Ft/min |
| DM 0483 | Number of floors registered during the hoist way learning. | n/a. |
| DM 0490 | Elevator actual floor position in holes. (0.75’’/ hole) | Holes |
| DM 0492 | Floor learning sequence activation. (Yes = 1234, No=0) (inspection) | n/a |
| DM 5800 | CJ1M, absolute position from 0 to 10 000 000 encoder pulses or perforated tape. | n/a |
| DM 5801 | | n/a |

## 9.14. VARIOUS:

| REGISTER | DESCRIPTION | UNIT |
|---|---|---|
| DM0183 | Motor thermal contact activation "THM ". (Yes = 0, No =1234) | n/a |
| DM0074 | Automatic reset of the rope gripper. (Yes =1, No = 0) | n/a |
| DM0249 | Construction mode activation in inspection, if = 1<br>Reset as soon as the elevator returns in normal mode. | n/a |
| DM0258 | If = 0, car stop switch input "SA" off on normal operation.<br>If = 1, car stop switch input "SA" activated on normal operation. | n/a |
| DM0275 | Number of movements before the alarm buffer reset (HR80 to HR87). | n/a |

## 9.15. RETURN TO SIMPLEX AND DUPLEX CONTROLLER PARKING:

| REGISTRE | DESCRIPTION | UNIT |
|---|---|---|
| DM0024 | Delay before the elevator returns to the parking floor.<br>(activated by DM95 or STA key, DM 1003 and DM 1004 duplex) | 0.1sec |
| DM0170 | Time before parking return during peak hour. | 0.1sec |
| DM0095 | Parking return activation. (Yes = 1 No = 0) | n/a |
| DM0096 | Parking door opened. (No = 0 Yes = 1) (Simplex only) | n/a |
| DM0097 | Parking floor level (Simplex only) 1, 2, 3, 4, 5, etc. To program the floor level, enter the wanted level in DM97. Example: for a parking at level 2, put 2 in DM97. If it's 0, the processor will automatically put 1. If it's a number higher than the total number of floors, the processor will put the top floor. | Floor |
| DM1003 | 1st parking level. (Duplex to program in car # 1)<br>DM 1003 and DM 1004 = 0 so no parking | n/a |
| DM1004 | 2nd parking level (Duplex to program in car # 1). | n/a |
| DM1200 | Parking door opened for 2 car group. (bit 0 = BZ, bit 15 = 16Z)<br>Must be programmed in both controllers. | n/a |
| DM1200 | Parking door opened for 3 car group and more. (bit 0 = BZ, bit 15 = 16Z)<br>Must be programmed in all controllers. | n/a |

## 9.16. HOME PARKING FOR TWO-CAR GROUP CONTROLLERS DUPLEX:

When two PLCs are networked together through RS232 communication cable, the controller #1 works as the dispatcher. DM95, DM96 and 97 are not used in this case because it is not a simplex controller anymore. Parking floors are programmed in controller #1 only, and are dispatched as followed

- Two priority levels can be programmed. The first car without any call will park itself at the first parking floor level (priority) programmed in DM1003. If the second car becomes also free of any call, it will be assigned to the second parking floor level programmed in DM1004.

**How to program parking floors (duplex controllers):**

The values to be stored in DM1003 and DM1004 are the numbers corresponding to the parking floor desired. (For example, 3 for the third levelling the building).

- No parking floor required the two cars be to be parked at random. DM1003 = 0000 DM1004 = 0000.

- One car only parks itself (for example at the second floor) and the other one is parked at random. DM1003 =2 DM1004 = 0000.

- The first available car parks itself at the second floor and the other available car parks itself at the fourth floor. DM1003 = 0002 DM1004 = 0004.

  ***We recommend the second option and to park a car at the ground floor. The controllers are set in factory with this option.***

  ***The delay before returning to the parking floor is stored in DM24 and must be programmed in both controllers.***

**Home parking with door opened:**

In each controller, DM1200 allows you to program the floor levels where you want the car to park, open its door and keep it opened.

- To see and change those floors levels with the LCD screen, proceed as followed:

  - Press "ESC" and the "UP/DOWN" keys to select "Register access".
  - Press "ENTER".
  - Select "DM" for register type.
  - Press "ENTER".
  - Press the "LEFT/RIGHT" and the "UP/DOWN" keys to enter 1200.
  - Press "ENTER".
  - Press "ENTER" to modify the value.
  - Press on the "LEFT/RIGHT" and "UP/DOWN" keys to enter 0002 and press "ENTER" to save the modification.

  *Ex: parking at the 2nd floor*

  **DM1200=0002**
  **0000000000000010**

  *Ex: parking at the 7th floor*

  **DM1200=0040**
  **0000000001000000**

  The bit at the far right (Bit 00) corresponds to the bottom floor of the building. The bit at the far left (Bit 15) corresponds to the 16th floor of a building.

*Example:*

*The parking floors in a building are the 2nd floor (ground floor) and the 4th floor (cafeteria). The user wishes that the doors stay opened only at the second floor.*

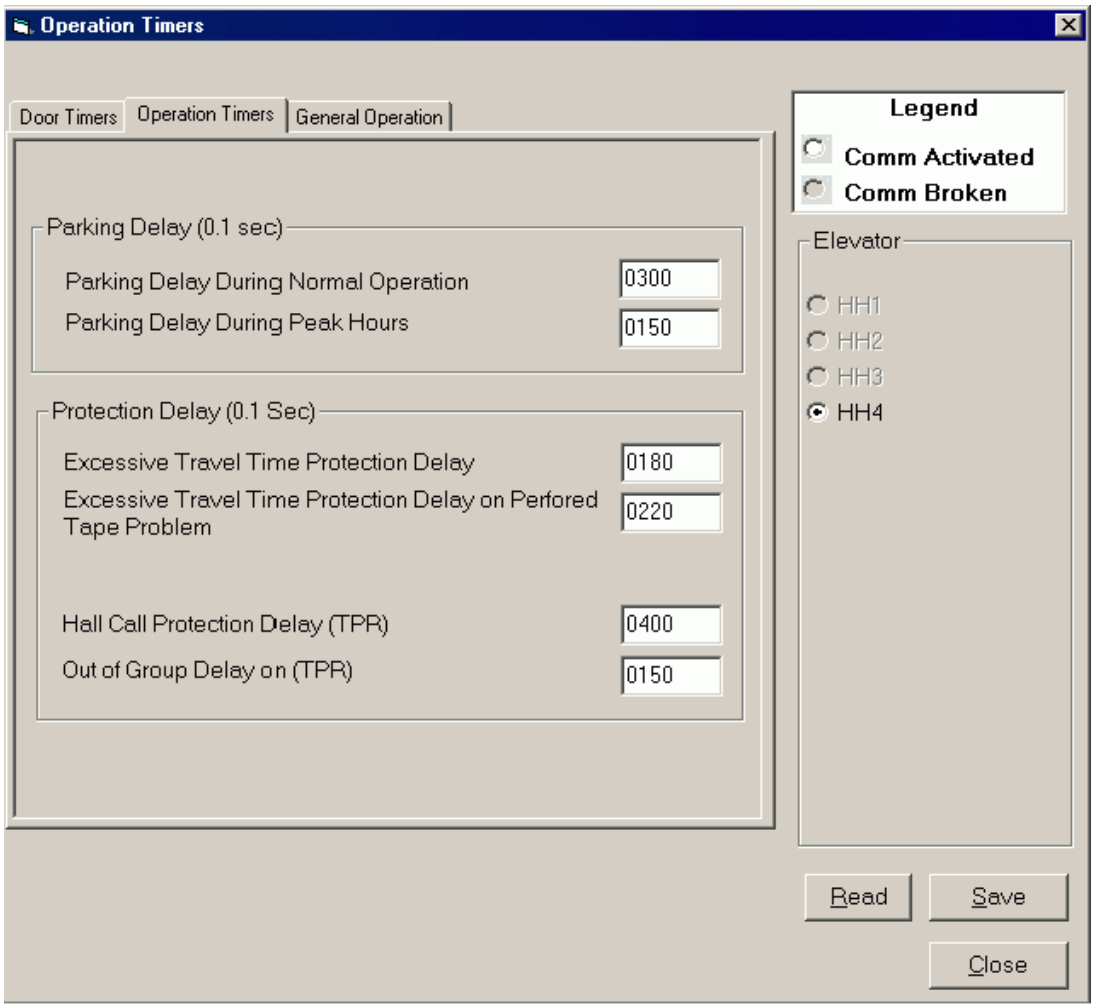
*The value to enter will be:*

| |
|---|
| **DM1200=0002**<br>**0000000000000010** |

***The setting of DM1200 must be done in both controllers (Controllers #1 and #2).***

## 9.17. HOME PARKING FOR GROUP CONTROLLER WITH OPERATOR SCREEN:

The car parks after the DM0024 time as soon as it receives authorization from the dispatcher. The delay is adjustable with the operator screen in the OPERATION TIMER section.




**Level and parking doors state configuration with operator screen:**

This option allows specifying to each elevator the state of the door when at parking level.

- Move the cursor over the menu option that shows the letter "P" and click on the left mouse button.

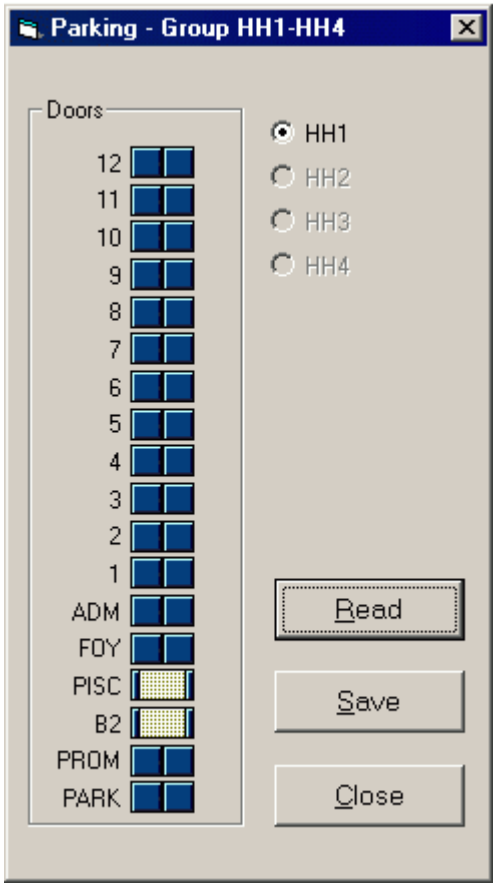
- Move the cursor on the "Opened doors parking". Wait a moment, and the elevators list should appear on the right.

- Move the cursor horizontally to the menu on the right and choose the group that the desired elevator is part of. In the case of a simplex, choose the name of the elevator.

- Click on the left mouse button.

### 9.17.1. Opened doors parking for groups with dispatcher:

In the following example, the door will permanently stay opened on the second floor, until it receives a hall call.



When the selected elevator is part of a group, move the mouse cursor in the corresponding white circle and click the left mouse button. A black dot should appear.

Move the cursor on the "READ" button and click the left mouse button.

**To see and change the door state:**

- Move the mouse cursor on the door picture at the desired level.
- Click once the left mouse button to open the door and a second time to close it.
- When the state of the door is determined, move the mouse cursor over the "SAVE" button and click the left mouse button. The message "SUCCESS" should appear at the top of the window. If not, save again.

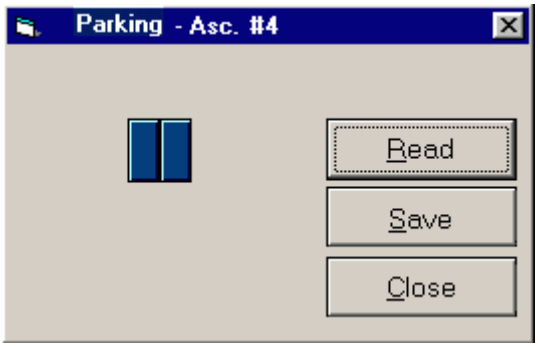
***Repeat this operation for each elevator in the group.***

- To exit the menu, move the cursor on either one of those buttons shown below and click on the left mouse button.

or

### 9.17.2. Opened doors parking for simplex elevators:

When the selected elevator is not part of a group, there can only be one parking level. Indicate the state of the doors when the elevator will be at this level.




**To see and change the door state:**

- Move the cursor over the "READ" button and click the left mouse button.
- If a change has to be made with the state of the door, move the cursor over the button showing a door.
- Click once the left mouse button to open the door, and a second time to close it.

- When the state of the door is determined, move the cursor over the "SAVE" button and click the left mouse button. The message "SUCCESS" should appear at the top of the window. If not, save again.

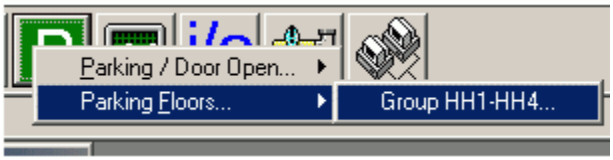
- To exit the menu, move the cursor over one or the other of the buttons shown below, and click the left mouse button.

or

### 9.17.3. Parking floors:

This option in the menu allows indicating to each group or simplex elevator the desired parking levels.

- Move the cursor on the menu option that shows the letter "P", and click the left mouse button.



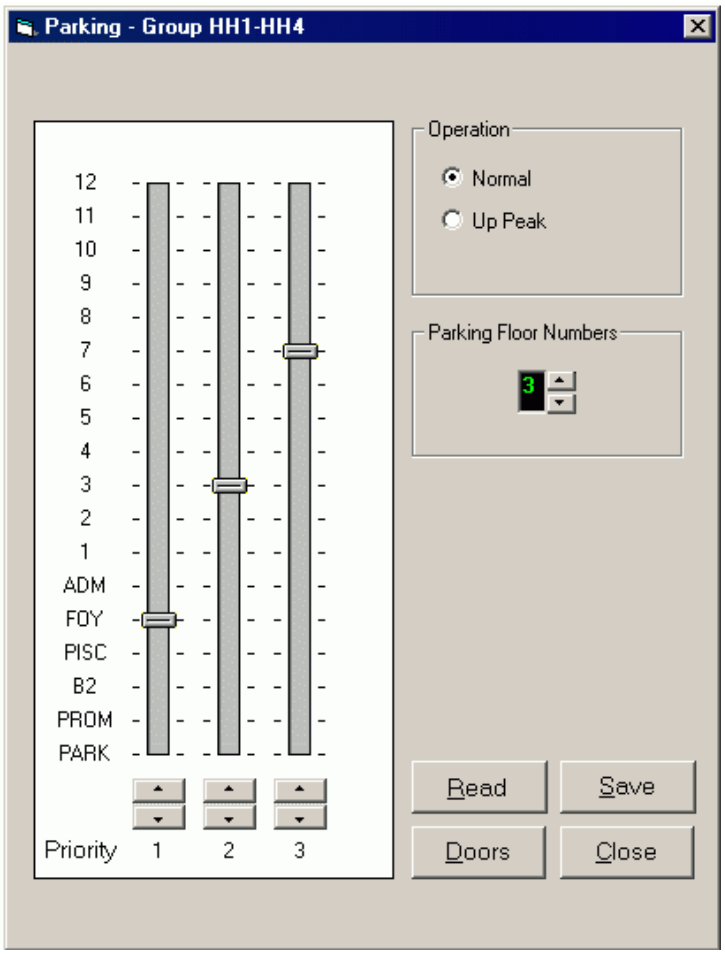

- Place the cursor on the "PARKING FLOORS" line. After a moment, the list of all the groups and simplex elevators should appear on the right.

- Move the mouse cursor horizontally on the name of the group or elevator desired.

- Click the left mouse button.

**Parking floors for groups with dispatchers:**

Parking levels dispatch works on a priority basis. The first available car will receive parking level priority 1. If a second car becomes available, it will receive priority 2. If a third car becomes available, it will receive priority 3.




***Configure the grid in a "NORMAL" operation mode or in an "UP PEAK" period for a duplex or group with a separate dispatcher.***

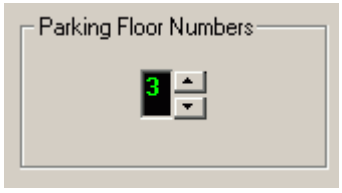
***It is possible to decide how many parking floors there will be.***

**Selecting an operation mode:**

Move the mouse cursor on the white circle at the left of the operation mode to modify, and click the left mouse button. In the example above, the "NORMAL" mode is selected.

**Changing the number of parked cars:**

Move the mouse cursor on either arrow in the "PARKED CARS" section. Each time you click the left mouse button, the number will go up or down.



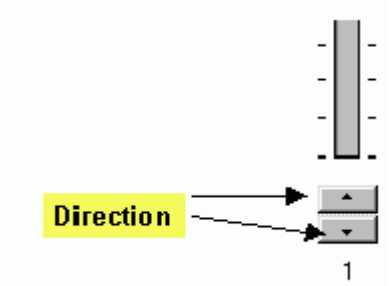
***If the number goes down, elevators will disappear from the vertical columns.***

***In the example shown above, the priority 1 elevator will park at the 5th floor, and a second one will park at the 9th floor in priority 2. The third one will park at the 13th floor in priority 3. If you have nothing, the car will remain at the same floor where it answered its last call (floating car).***

**Changing parking levels:**

Move the mouse cursor over the up or down arrows located under the corresponding priority vertical bar.

Each time you click the left mouse button, the cursor representing the elevator will either go up or down accordingly. Adjust until you reach the right parking level. Repeat for the other priorities.




**To transfer the parking floors in the dispatcher:**

Move the mouse cursor on the "SAVE" button and click on the left mouse button.

The "SUCCESS" message should appear. If not, save again.

This button allows accessing directly the "OPEN DOOR PARKING" menu.

To exit the window without modifying the parameters, move the mouse cursor on either one of those buttons and press the left mouse button.

## 9.18. UP PEAK PERIOD (OPTIONAL) FOR GROUP CONTROLLER (WITH SEPARATE DISPATCH):

The group assigns parking levels. Refer to the screen operator user's manual.

## 9.19. DOWN PEAK PERIOD (OPTIONAL) FOR GROUP CONTROLLER (WITH SEPARATE DISPATCH):

The group assigns parking levels. Refer to the operator screen user's manual.

## 9.20. NEXT CAR UP (FOR GROUP CONTROLLER WITH SEPARATE DISPATCH ONLY):

DM166 = 0 No "next car up"

DM166 = 1 Next "car up" in service.

When it is active, a car will be selected to go up from the ground floor. The doors will stay opened and the direction arrow will be activated in up direction.

## 9.21. UP PEAK PERIOD FOR A TWO-CAR GROUP CONTROLLER (WITHOUT SEPARATE DISPATCH):

When a two-car group controller is provided with this option, the up peak period may be initiated. Both controllers may initiate automatically an up peak period by continuously monitoring up calls in the building.

The parking floors have to be programmed in the controller #1 only: priority #1 = DM1005, priority #2 = DM1006.

When the building is going through an up peak period, only the parking floors are changed for that period. If "0000" is stored in DM1005 and DM1006, the up peak operation is disabled.

**Programmed up peak:**

- Priority #1 (DM1005) = the first available car will park at the level entered in DM1005. Example: 2 in the DM1005 = 2nd floor of the building.

- Priority #2 (DM1006) = the second available car (while the other is already at the level for priority #1) will park at the level entered in the DM1006. Example: 1 in the DM1006 = first floor of the building.

**Setting the parameters for up peak operation in controller #1:**

- The number of up calls for BU, 2U and 3U floors necessary to initiate an up peak period.

  There is a counter assigned to each one of those three floors that cumulates every call registered on its specific floor. If one of those counters reaches the value stored in DM1039 within the time lapse stored in DM1040, an up peak period is initiated.

  A time lapse has to be determined to periodically reset the counters (DM1040).

  *Example:*

  *DM1039 = 0005 = 5 calls within the time lapse*

  *As soon as one of the counters reaches 5 calls within the time lapse, an up peak period is initiated.*

- Lapse of time allowed cumulating calls on BU, 2U, and 3U floors.

The lapse of time allowed to cumulate the calls is stored in DM1040 in tenths of seconds.

*Example:*

*DM1040 = 1200 = 120 sec. therefore, 2 minutes*

*Every 2 minutes, call counters on BU, 2U, 3U floors are reset*

- Up peak period duration when it has been triggered automatically.

  The duration of the up peak period is stored in DM1041 in minutes.

  *Example:*

  *DM1041 = 0003 = 3 minutes period of time*

  *So, for the 1st method, you have to program only DM1005 and DM1006; for the 2nd method, you have to program DM1005, DM1006, DM1039, DM1040, and DM1041*

## 9.22. DOWN PEAK PERIOD FOR TWO-CAR GROUP (WITHOUT SEPARATE DISPATCH):

When a two-car group controller is provided with this option, the down peak period may be initiated. Both controllers may initiate automatically a down peak period by continuously monitoring down calls in the building.

The parking floors have to be programmed in the controller #1 only: priority #1 = DM1007, priority #2 = DM1008.

When the building is going through a down peak period, only the parking floors are changed for that period. If "0000" is stored in DM1007 and DM1008, the down peak operation is disabled.

**Programmed down peak:**

- Priority #1 (DM1007) = the first available car will park at the level entered in DM1007. Example: 7 in the DM1007 = 7th floor of the building.

- Priority #2 (DM1008) = the second available car (while the other is already at the level for priority #1) will park at the level entered in the DM1008. Example: 10 in the DM1008 = 10th floor of the building.

**Setting the parameters for up peak operation in controller #1:**

- The total number of down calls for all floors necessary to initiate a down peak period.

  A counter cumulates every down call registered on all floors. If that counter reaches the value stored in DM1035 within the lapse of time stored in DM1036, a down peak period is initiated.

  A time lapse has to be determined to periodically reset the counters (DM1036).

*Example:*

*DM1035 = 0015 = 15 calls during lapse of time.*

*As soon as the counter reaches 15 calls within the lapse of time, a down peak period is initiated.*

- Lapse of time allowed cumulating total down calls.

  The lapse of time lapse allowed to cumulate the calls is stored in DM1036 in tenths of seconds.

  *Example:*

  *DM1036 = 1200 = 120 sec. So, 2 minutes*

  *Every 2 minutes, the down-call counter is reset.*

- Down peak period when it been triggered automatically.

  The duration of the down peak period is stored in DM1037 in minutes.

  *Example:*

  *DM1037 = 0003 = 3 minutes lapse of time*

  ***So, for the 1st method, you have to program only DM1007 and DM1008; for the 2nd method, you have to program DM1007, DM1008, DM1035, DM1036, and DM1037.***

  ***For duplex controllers, the functions must be programmed in both controllers individually, except for the DM1003, DM1004, DM1005, DM1006, DM1007, DM1008, DM1035, DM1036, DM1037, DM1039, DM1040 and DM1041, which must only be programmed in controller #1.***

## 10. SYMBOLS LISTING:

| | |
|---|---|
| 150F: | 150 FPM speed limiting device monitoring |
| 2D-3D, 4D…: | Down hall calls |
| ALT: | Alternative floor recall on fire alarm |
| BAC: | Car stop bypass |
| BC-2C.3C…: | Car calls |
| BU-2U, 3U…: | Up hall calls |
| BZ-2Z, 3Z…: | Car zone |
| BDS: | Safety edge |
| BR: | Brake relay |
| BRC: | Brake contact |
| BRK: | Brake relay |
| BUZ: | Phase 1, nudging, car call acceptance buzzer |
| CCA: | Car call recording bip |
| CDS: | Counterweight displacement switch |
| CL: | Door closing contactor |
| DC: | Down direction contactor |
| DCL: | Closed door limit switch |
| DSL: | Down slowdown signal (Elevator 150 FPM and -) |
| DOL: | Opened door limit switch |
| DZO: | Door zone |
| DZO1: | Door zone |
| GD: | Car gong with down arrow light |
| GEN1: | Emergency generator relay |
| GEN2: | Emergency power pre-signal |
| GP: | Passing gong |
| GU: | Car gong with up arrow light |
| ETSL: | Speed limiting device monitoring (elevators of more than 200 FPM) |
| FMR: | Fire machine room alarm |
| FS (input): | Main floor recall on fire alarm |
| FS (output): | Low speed nudging relay |
| GTS: | Rope gripper control relay |
| HDL: | Landing door locked |
| HLD: | Mechanical brake holding voltage relay |
| HT1/HT2: | Perforated tape high-speed counter signals |
| INC: | Phase 1 activated |
| ISR: | Inspection relay |
| K: | Close front door button |
| LD: | Down levelling |

| | |
|---|---|
| LEB: | Down extreme limit switch |
| LEH: | Up extreme limit switch |
| LNB: | Down normal limit switch |
| LNH: | Up normal limit switch |
| LRH: | Up slowdown limit switch |
| LRH1: | First up slowdown limit switch (300-400 FPM elevator) |
| LRB: | Down slowdown limit switch |
| LRB1: | First down slowdown limit switch (300-400 FPM elevator) |
| LU: | Up levelling |
| LT: | Low Speed contactor |
| M: | Main contactor |
| M1: | Auxiliary main contactor |
| MA: | Drive enable relay |
| MT: | Off delay on "M" contactor at stopping |
| NUD: | Nudging buzzer |
| OP: | Door opening contactor |
| OK1, OK2,…: | Signals indicating the presence of each car when dispatcher failure, only in groups |
| PC: | Car door relay |
| PH: | Door photocell |
| PP: | Landing door relay |
| PR: | Potential relay |
| PS1: | Levelling speed in door zones (7 FPM) |
| PS2: | Controller inspection speed (50 FPM) |
| PS1 + PS2: | Top of car inspection speed (maximum 150 FPM) |
| PS4 + PS1: | One floor run speed (for elevators running at 300 and 400 FPM) |
| PS4 + PS2: | High speed |
| SA: | Car stop switch signal |
| SCS: | Seismic switch signal |
| SD: | Car going down |
| SI: | Independent service |
| SLH1: | First top first speed limiting device (300-400 FPM elevator) |
| SLH: | Top speed limiting device |
| SLB1: | First bottom speed limiting device (300-400 FPM. elevator) |
| SLB: | Bottom speed limiting device |
| SPE: | Vocal annociator enable |
| SPR: | Security line relay |
| SU: | Car going up |
| R5: | Trouble redundancy relay |
| RBDS: | Rear safety edge |

| | |
|---|---|
| RCL: | Rear door closing contactor |
| RDCL: | Rear closed door limit switch |
| RDOL: | Rear opened door limit switch |
| RDY: | Fault drive relay |
| RK: | Rear door close button |
| ROP: | Rear door-opening contactor |
| RPH: | Rear door photocell |
| RSD: | Drive reset relay |
| RSR: | Rope gripper reset relay |
| TBBH: | Test Bypass holding voltage relay |
| TUS: | Thermistor Relay |
| TVT: | High speed acceleration timer |
| TLT: | Low speed acceleration timer |
| THM: | Motor thermal contact |
| UC: | Up direction contactor |
| UDC: | Working relay |
| UG1, UG2: | Emergency power selector |
| USL: | Up slowdown signal (Elevator 200 FPM and -) |
| VT: | High speed contactor |
| XIN, XIN1: | Hoistway access relay |

# 11. MAINTENANCE:

## 11.1. ALARMS AND FAULTS:

### 11.1.1. Alarms and status list:

The PLC memorizes several alarms and status which can be seen using the LCD screen.

***All status and alarms are memorized in retentive registers "HR" and will be retained on a power loss. To reset the list, activate the controller's maintenance switch 4 times in 30sec or go to the LCD's menu "Erase alarms".***

### 11.1.2. Visualization of the alarms in the CJ1M PLC controller:

If an alarm occurred, the corresponding bit will be put at 1. To look up the register, proceed as followed (See section 14.5 for complete alarms description):

**Using the LCD screen, do the following:**

- Press "ESC" and on the "UP/DOWN" keys to select "Alarms buffer" (present alarms).
- Press "ENTER".
- Press on the "UP/DOWN" keys to visualize the present alarms.
- To visualize the alarm historical, press "ESC" and on the "UP/DOWN" keys to select "Alarms history" (alarm historical, holds the last 20 registered alarms).
- Press "ENTER".
- Press on the "UP/DOWN" keys to visualize the registered alarm historical.
- Note to erase the alarms: press "ESC" and the "UP/DOWN" keys to select "Erase alarms".
- Press "ENTER" to erase the alarms.

***Note: for more details see appendix C.***

### 11.1.3. Automatic erasing of the alarms:

If an alarm occurred but that the situation has been corrected, after a certain number of trips, the controller will automatically erase the registered alarms. DM275 contains the number of trips before the alarms are erased. So, if DM275 holds the value 50, the alarms will be erased after every 50 trips made by the elevator. In le LCD, the alarms list will be erased, but the historical will not and will still hold the last 20 registered alarms. Only menu "Erase Alarms" of the LCD erases the alarm historical.

## 11.2. PLC BATTERY REPLACEMENT:

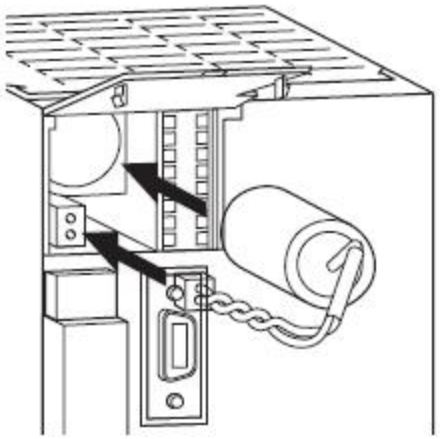
The battery lifetime is approximately five years. If the voltage level becomes too low, the ALARM indicator on the PLC will flash and the car will be turned "out of order". Then, you must replace the battery within one week. Replacement dates of the battery are indicated on the CPU front cover. The catalogue number for the battery is CJ1W-BAT01.

***WARNING***

***When replacing the battery, you must proceed quickly (within 5 minutes), or else, you will loose the PLC program.***

**Follow these steps to replace the battery:**

- Turn off the main power.
- Open the cover above the peripheral port on the CPU. You should now see the battery.



- Pull out the battery and unplug its connector.
- Quickly put the new battery in place and plug the connector.
- Turn the main power on.
- Though it is not mandatory, you should erase the "low battery" message in the CPU. However, you have to do it if a "low battery" alarm is active.
  - Connect the hand held programmer;
  - Type in the password CLR-MONTR-CLR;
  - The screen will display "low batt";

- Type in CLR-FUN-MONTR-MONTR.

***Make sure that POWER and RUN indicators on the CPU are on. Then you may turn the elevator back in service.***

## 11.3. INPUT/OUTPUT MODULES:

**Output module (CJ1W-OC211):**

Output modules are provided with 2AMP rated not removable relays. Those relays may become defective after some hundreds of thousands of operations or if their contacts are overloaded.

**Output module (CJ1W-OD231):**

The PLC output module includes 100ma 24VDC optocouplers.

**Output problems:**

- If the red output led is "ON" but there is no voltage on the corresponding terminal; the relay or the optocouplers may be in trouble. Replace the module.
- If the red output led is "OFF" but there is a voltage on the corresponding terminal, the relay contact may be "soldered". Replace the module.

**Relay positioning in the CJ1W-OC211 module:**

| SORTIE | RELAIS |
|---|---|
| 0 | X101 |
| 1 | X102 |
| 2 | X103 |
| … | … |
| 14 | X115 |
| 15 | X116 |

**Input module (CJ1W-ID212, 24VDC, CJ1W-ID231, CJ1W-ID261 or CJ1W-IA111, 120VAC):**

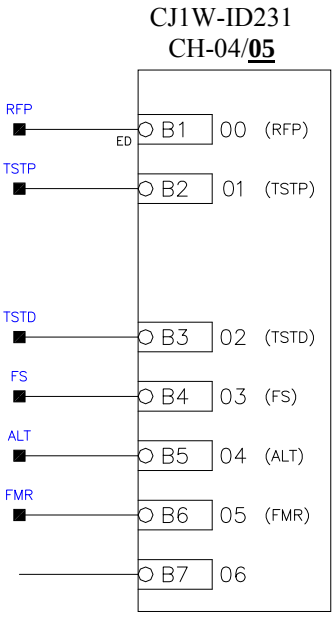
- The controller is provided with 16 points, 32 points or 64 points at 24VDC or 16 points 120VAC input module. This type of input module is built with optocouplers able to withstand millions of operations. However, an excessive input voltage level may damage those inputs.

### 11.3.1. Reading inputs and outputs on modules of more than 16 inputs or outputs:

On the modules CJ1W-ID261 (64 inputs), CJ1W-ID231 (32 inputs) and CJ1W-OD231 (32 outputs), the inputs and outputs status are not all displayed at the same time.

## CJ1W-ID231 and CJ1W-OD231:

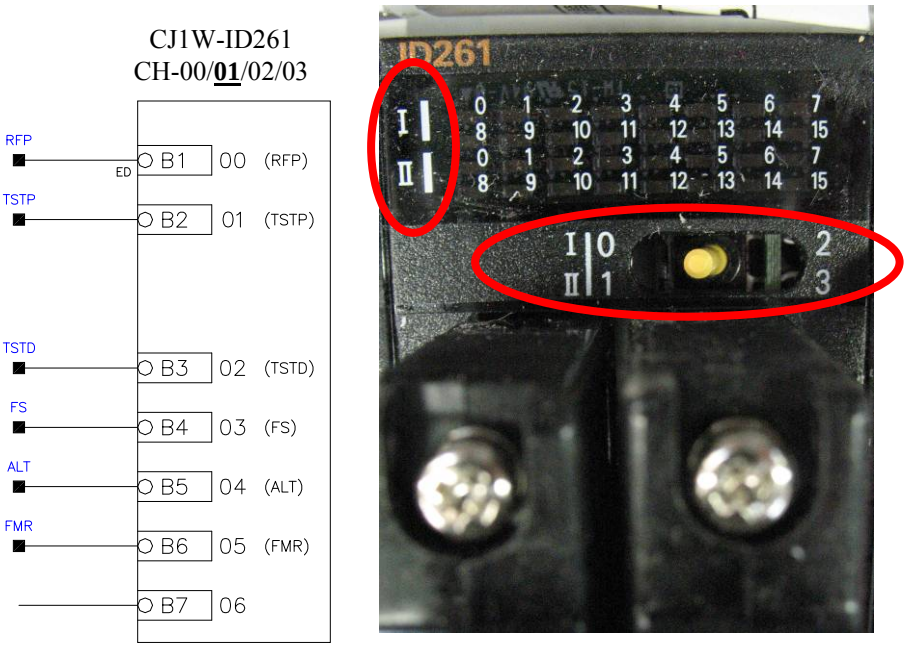
For the 32 points modules (CJ1W-ID231 and CJ1W-OD231) a small yellow switch located over the connectors allows alternating between the first 16 points and the last 16. If the switch is on the left (0), the module displays the first 16 points and if it's on the right (1), the 16 lasts. On the electrical drawings of the controller, the underlined number indicates the selected module. For example, if the numbers are **04**/05, you must put the switch on the left (0) to see the inputs state and if 04/**05** is written on the input or output module to visualize, put the switch to the right (1).



For example, to visualize the input TSTD, you must verify the "DEL2" on the ID231 module with the switch on the right (1).

## CJ1W-ID261:

For the 64 points modules (CJ1W-ID261) a small yellow switch located over the connectors allows alternating between the first 32 points and the last 32. If the switch is on the left (0), the module displays the first 32 points on 2 series of DEL and if it's on the right, (1) the last 32. On the electrical drawings of the controller, the underlined number indicates the selected module. For example, if the modules numbers are 00/**01**/02/03, you must put the switch on the left (0) and look at the second row (II) of DEL. To see the inputs state is 00/01/**02**/03 is written on the module to visualize, put the switch on the right (1) and look at the first series of DEL (I). So, if we want to visualize the inputs of module 02, you must put the switch on the right (1) and look at the first 16 DEL (16 the top of row 1 (I)).




For example, to visualize the input TSTD, you must check the "DEL2" of the second row (II) of the module ID261 with the switch on the left (0).

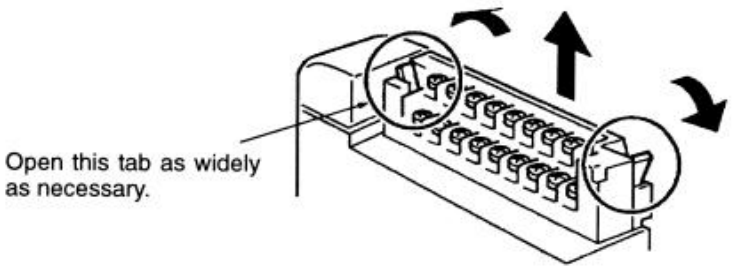
**Input problems:**

- If there is some voltage on input but the corresponding red input led is "OFF"; the optocoupler may be in trouble. Replace the module.

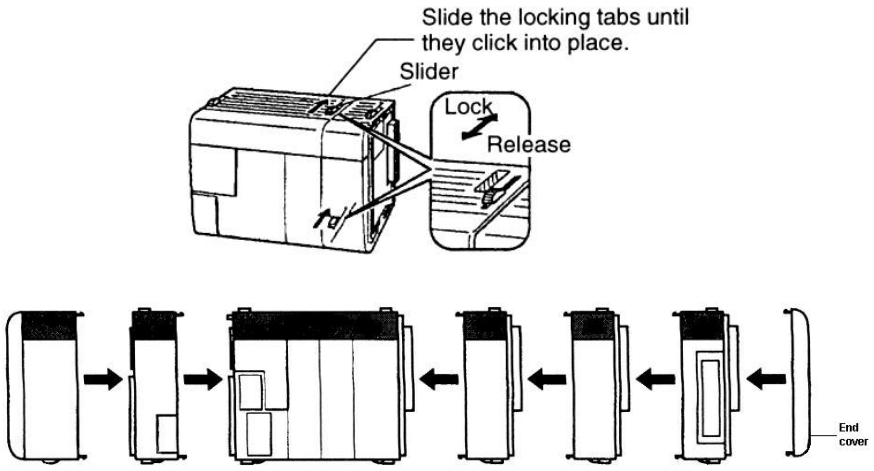
**Module replacement:**

***Always turn off the power before removing or putting in a module in the PLC.***

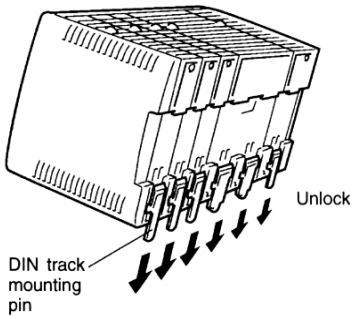
- Remove the terminal block.




- Push back the yellow sliding locks on the top and bottom of each module towards the mounting plate as indicated in the figure below. Slide the modules to the right, to free the one to be replaced




- Release the holding clips at the bottom of the module




- Take the defective module off the rail by releasing the holding clip at the bottom of the module.

- Put in the new module at the same location and go back through the previous steps.

***Make sure the right end cover is back in place, or the PLC will not work properly.***

**Re-assignment of an I/O as an emergency solution:**

If you have to replace an I/O point, and you do not have a spare one, program the troubled output on a spare output, but only if it shares the same voltage.

Bring your programming tool in the machine room and call us. To be able to change the program, you need a password. We will tell you what to do for the I/O address modification

## 11.4. PEAK VOLTAGE PROTECTION:

Please note a wrong connection could short-circuit the "TVS" (transient voltage suppressor) that protects the elevator. If it occurs, they must be verified and replaced if needed.

To verify them, use an ohmmeter and place the sensors on the "TVS" terminals. If the value shown is 0, the "TVS" is short-circuited.

## 11.5. ALARMS DESCRIPTION:

| Alarms #: | Description: | Causes and verifications |
|---|---|---|
| HR8000 | Spare | |
| HR8001 | The PLC controller battery alarm | See section 14.2 of user's manual for the PLC battery replacement. |
| HR8002 | Excessive travel time. | The elevator has exceeded the DM0008 or DM0017 delay during the travel. Verify: the elevator commute, the LRH/LRB slowdown limits and the drive speed control circuit board. |
| HR8003 | Phase lost/inverse detection. | Verify the phase detection relay "RPR". |
| HR8004 | Weight sensor "**LW2**" was activated. | Verify the weight load device that activated the LW2 input. |
| HR8005 | Over temperature motor sensor detection "**THM**" | Verify the state of the thermal sensor that activated the THM input. |
| HR8006 | Deactivation of the rope gripper contacts in the safety line. | Verify the rope gripper contacts between RG5 and RG7. They opened the safety line. For more details, see the electrical drawings. |
| HR8007 | One of the 2 door zone sensors "**DZO**" and "**DZO1**" remained activated out of the levelling zone. | Verify the tape head. One of the sensors remained activated. |
| HR8008 | "**DZO**" and "**DZO1**" door zone sensor did not operate properly in levelling zone. | Verify the tape head. One of the sensors did not activate. |
| HR8009 | SPARE | |
| HR8010 | "**LU**" Levelling Up sensor did not operate properly in levelling zone. | Verify the relay and sensor operation in the top of car reader connecting box. |
| HR8011 | "**LD**" Levelling Down sensor did not operate properly in levelling zone. | Verify the relay and sensor operation in the top of car reader connecting box. |
| HR8012 | **DCL** switch did not open when **front** door closed. | Verify DCL switch operation. The switch did not open before the DM0032 delay, when front door closed, with PP and PC switches closed. |

| **Alarms #:** | **Description:** | **Causes and verifications** |
|---|---|---|
| HR8013 | **DCL** did not close when **front** door opened. | Verify DCL switch operation. The switch did not close when the front door opened, with DOL switch opened, PC and PP switches closed. The DCL switch opened more than a half second while the front door was completely opened. |
| HR8014 | **DOL** switch did not open when **front** door opened. | Verify DOL switch operation. The switch did not open when the front door is completely opened, or the door did not completely open after 12 seconds on door opening instruction when DCL switch and OP relay are closed. |
| HR8015 | **DOL** switch did not close when **front** door closed. | Verify DOL switch operation. The switch did not close when the front door closed, with DCL switch opened and PP closed. |
| HR8100 | **RDCL** switch did not open when **rear** door closed. | Verify RDCL switch operation. The switch did not open before DM0032 delay when rear door is closing, with PC and PP switches closed. |
| HR8101 | **RDCL** switch did not close when **rear** door opened. | Verify RDCL switch operation. The switch did not close when rear door opened, RDOL switches opened, PC and PP switches closed. The RDCL switch opened more than a half second while the rear door was completely opened. |
| HR8102 | **RDOL** switch did not open when **rear** door opened. | Verify RDOL switch operation. The switch did not open when rear door opened or the door did not fully open after 12 seconds on door opening instruction when RDCL switch and ROP relay are closed. |
| HR8103 | **RDOL** switch did not close when **rear** door closed | Verify RDOL switch operation. The switch did not close when rear door closed, with RDCL switches opened and PP closed. |
| HR8104 | **PP** landing doors contact did not close when doors closed. | Verify PP landing doors contact. The contact did not close when door was fully closed, after 20 seconds, DCL and RDCL opened, CL and RCL relays activated. Verify DCL and RDCL switches operations. |

| Alarms #: | Description: | Causes and verifications |
|---|---|---|
| HR8105 | **PC** car doors contact did not close when doors closed | Verify PC car doors contact. The contact did not close when door was fully closed, after 20 seconds, DCL and RDCL opened, CL and RCL relays activated. Verify DCL and RDCL switches operations. |
| HR8106 | **PC** or **PP** contacts did not open when doors opened. | Verify PC and PP operation. PC and PP contacts did not open when doors opened, DCL and RDCL switches opened. Verify if either contact is short-circuited and DCL and RDCL switches operation. This fault can occur if those switches are not opened when PP and PC are fully closed. |
| HR8107 | **Front** door did not close completely after 5 attempts. | Verify doorway. Something might be blocking. Check PP and PC contacts operation. Also check DCL switch operation. |
| HR8108 | **Rear** door did not close completely after 5 attempts. | Verify doorway. Something might be blocking. Check PP and PC contacts operation. Also check RDCL switch operation. |
| HR8109 | Water detection in the hoistway | Water in the hoistway or verify the float switch. |
| HR8110 | Spare | |
| HR8111 | **J9** security line was opened**.** | J9 security line opened while the elevator was moving or 4 seconds after it had stopped. Verify security line switches (see drawings for more details). |
| HR8112 | Spare | |
| HR8113 | **M** contactor failure. | Verify M contactor and M1 relay operation when opening and closing. Verify M and M1 processor input contacts operation. |
| HR8114 | Earthquake Service | Verify the state of the inputs "Seismic switch" and "Counterweigh derailment switch" and reset the sequence with the button "Reset earthquake service". |

| **Alarms #:** | **Description:** | **Causes and verifications** |
|---|---|---|
| HR8115 | Perforated tape reader malfunction. | The processor receives too many or not enough pulses from the perforated tape. Verify HT1 and HT2 indicators operation on the processor (they should be flashing when elevator is moving). Clean both infrared transmitters and the hoistway mirror. |
| HR8200 | | . |
| HR8201 | **UDC** relay failure. | Verify UDC relay operation when opening and closing. Verify circuit operation on UDC processor input. |
| HR8202 | | |
| HR8203 | The elevator slides in the brake pads after floor stop. | The elevator has moved +/- 6 inches when stopped at a floor. Verify brake springs adjustment. |
| HR8204 | Uncontrolled elevator speed (CVI). | The elevator speed was over 150 FPM in the levelling zone or in inspection mode. The perforated tape or the encoder counter may be loosing counts. |
| HR8205 | **SR** security line supervision was lost. | SR security line opened while the elevator was moving or 4 seconds after it had stopped. Verify security line switches (see drawings for more details). |
| HR8206 | SPARE | |
| HR8207 | Rope gripper activation by programmable PLC. | Verify if PP and PC opened outside the DZO. The car re-levelled at a floor more than 5 times within 60 seconds. Verify, if needed, the mechanical brake switch. The car traveled more than 6 inches, without command, while it was stopped at a landing. |
| HR8208 | The elevator moved in the wrong direction. | Verify drive "% No load current, Inertia" adjustments and gains. Check if the drive can maintain the load. Check M contactor operation. |
| HR8209 | Car door contact **PC** relay opened during movement out of door zone. | Verify PC contacts operation and clean them. |
| HR8210 | Hall door contact **PP** relay opened during movement out of door zone. | Verify PP contacts operation and clean them. This can occur when mechanics open the hall doors with a lunar key, while the elevator is moving. |
| HR8211 | Brake malfunction at opening or closing. | It takes too much time for the brake to activate or it does not open. Check the mechanical brake operation. |

| **Alarms #:** | **Description:** | **Causes and verifications** |
|---|---|---|
| | | Also check brake springs adjustments. |
| HR8212 | SPARE | |
| HR8213 | Excessive re-levelling attempts at the same floor. | Verify levelling speed PS1 in the drive. Verify mechanical brake closing operation. |
| HR8214 | SPARE | |
| HR8215 | Spare | |
| HR8300 | SPARE | |
| HR8301 | Spare | |
| HR8302 | Spare | |
| HR8303 | **LRB** bottom slow down limit did not operate properly. | Verify electrical wiring and physical contacts. |
| HR8304 | **LRH** top slow down limit did not operate properly. | Verify electrical wiring and physical contacts. |
| HR8305 | Spare | |
| HR8306 | Spare | |
| HR8307 | Spare | |
| HR8308 | Spare | |
| HR8309 | Spare | |
| HR8310 | **LNB** down normal limit switch failure. | Verify electrical wiring and limit switch contact. |
| HR8311 | **LNH** up normal limit switch failure. | Verify electrical wiring and limit switch contact. |
| HR8312 | Motor overload detected by the overload relay. | Verify the motor's electrical connexion and its voltage and current. An overcurrent as been deteced. Make sure no mechanical trouble prevents the car from moving. |
| HR8313 | Spare | Verify the state of the inputs "Seismic switch" and "Counterweigh derailment switch" and reset the sequence with the button "Reset earthquake service". |
| HR8314 | Wrong LRB adjustment. | The limit is too far from the deceleration point. The DM360 is even to the holes difference between the deceleration point and the slowdown limit. Reajust consequently. |
| HR8315 | Wrong LRH adjustment. | The limit is too far from the deceleration point. The DM364 is even to the holes difference between the deceleration point and the slowdown limit. Reajust consequently. |

| Alarms #: | Description: | Causes and verifications |
|---|---|---|
| HR8400 | **Spare** | |
| HR8401 | Spare | |
| HR8402 | Spare | |
| HR8403 | Spare | |
| HR8404 | Spare | |
| HR8405 | **Spare** | |
| HR8406 | Spare | |
| HR8407 | Spare | |
| HR8408 | Spare | |
| HR8409 | Spare | |
| HR8410 | Spare | |
| HR8411 | Corrupted data | PLC's data are corrupted. Defective PLC or data loss. |
| HR8412 | Spare | |
| HR8413 | Spare | |
| HR8414 | Spare | |
| HR8415 | Spare | |
| | **Note: HR85-86-87 are redundancy faults, R5 and ETSL.** | |
| HR8500 | **DZO** relay did not activate. | Verify DZO relay operation, because it did not activate when the PLC DZO input activated. |
| HR8501 | **DZO** relay contacts remained closed. | Verify DZO relay operation, because it remained closed when the PLC DZO input deactivated |
| HR8502 | **DZO1** relay did not activate | Verify DZO1 relay operation, because it did not activate when the PLC DZO1 input activated. |
| HR8503 | **DZO1** relay contacts remained closed. | Verify DZO1 relay operation, because it remained closed when the PLC DZO1 input deactivated |
| HR8504 | Spare | |
| HR8506 | Spare | |
| HR8506 | **LU** and **LD** levelling sensors were activated at the same time. | Verify LU and LD inputs operation. Verify the sensor operation in the top of car reader connecting box |
| HR8507 | **ISR** relay did not activate. | Verify ISR relay operation, because it did not activate when the PLC ISR input activated |
| HR8508 | **ISR** relay has remained closed. | Verify ISR relay operation, because it remained closed when the PLC ISR input deactivated |

| Alarms #: | Description: | Causes and verifications |
|---|---|---|
| HR8509 | **PP** relay did not activate. | Verify PP relay operation, because it did not activate when the PLC PP input activated |
| HR8510 | **PP** relay has remained closed. | Verify PP relay operation, because it remained closed when the PLC PP input deactivated |
| HR8511 | **PC** relay did not activate. | Verify PC relay operation, because it did not activate when the PLC PC input activated |
| HR8512 | **PC** relay has remained closed. | Verify PC relay operation, because it remained closed when the PLC DZO input deactivated |
| HR8513 | **BAC** relay did not activate. | Verify BAC relay operation, because it did not activate when the PLC BAC input activated |
| HR8514 | **BAC** relay has remained closed. | Verify BAC relay operation, because it remained closed when the PLC BAC input deactivated |
| HR8515 | Spare | |
| HR8600 | **ETSL** relay did not activate. | Verify ETSL relay operation, because it did not activate when the PLC ETSL input activated |
| HR8601 | **ETSL** relay has remained closed. | Verify ETSL relay operation, because it remained closed when the PLC ETSL input deactivated |
| HR8602 | Spare | |
| HR8603 | **XIN** relay did not activate. | Verify XIN relay operation, because it did not activate when the PLC XIN input activated |
| HR8604 | **XIN** relay has remained closed. | Verify XIN relay operation, because it remained closed when the PLC XIN input deactivated |
| HR8605 | **R5** relay did not activate. | Verify R5 relay operation, because it did not activate when the PLC R5 input activated |
| HR8606 | **R5** relay has remained closed. | Verify R5 relay operation, because it remained closed when the PLC R5 input deactivated |
| HR8607 | **RCR** relay did not activate. | Verify RCR relay operation, because it did not activate when the PLC RCR input activated |
| HR8608 | **RCR** relay has remained closed | Verify RCR relay operation, because it remained closed when the PLC RCR input deactivated |
| HR8609 | **PR** relay did not activate. | Verify PR relay operation, because it did not activate when the PLC PR input activated |
| HR8610 | **PR** relay has remained closed. | Verify PR relay operation, because it remained closed |

| **Alarms #:** | **Description:** | **Causes and verifications** |
|---|---|---|
| | | when the PLC PR input deactivated |
| HR8611 | **HDL** relay did not activate. | Verify HDL relay operation, because it did not activate when the PLC HDL input activated |
| HR8612 | **HDL** relay has remained closed. | Verify HDL relay operation, because it remained closed when the PLC HDL input deactivated |
| HR8613 | 24 Volts DC **+A** power failure. | Verify protection fuse. The filament could be defective. There may have been a short-circuit. |
| HR8614 | Spare | |
| HR8615 | Spare | |
| HR8700 | Spare | |
| HR8701 | Spare | |
| HR8702 | **GTS** relay did not activate. | Verify GTS relay operation, because it did not activate when the PLC GTS input activated |
| HR8703 | **GTS** relay has remained closed. | Verify GTS relay operation, because it remained closed when the PLC GTS input deactivated |
| HR8704 | **DLT** relay did not activate. | Verify DLT relay operation, because it did not activate when the PLC DLT input activated |
| HR8705 | **DLT** relay has remained closed. | Verify DLT relay operation, because it remained closed when the PLC DLT input deactivated |
| HR8706 | Spare | |
| HR8707 | Spare | |
| HR8708 | Spare | |
| HR8709 | Spare | |
| HR8710 | Spare | |
| HR8711 | Spare | |
| HR8712 | Spare | |
| HR8713 | Spare | |
| HR8714 | **UP/DW** relay did not activate. | Verify UP/DW relay operation, because it did not activate when the PLC UP/DW input activated |
| HR8715 | **UP/DW** relay has remained closed. | Verify UP/DW relay operation, because it remained closed when the PLC UP/DW input deactivated |
| HR8800 | Communication lost with the JRT-CAN-MAS | Verify connections, supply and switches configuration. (See CANBUS manual) |

| **Alarms #:** | **Description:** | **Causes and verifications** |
|---|---|---|
| HR8801 | Communication lost with the JRT-CAN-HCI | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8802 | Communication lost with the Car B duplex | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8803 | Communication lost with the module 0 JRT-CAN-24IO | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8804 | Communication lost with the module 1 JRT-CAN-24IO | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8805 | Communication lost with the module 2 JRT-CAN-24IO | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8806 | Communication lost with the module 3 JRT-CAN-24IO | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8807 | Dupline network was opened | Verify connections, supply and switches configuration. (See CANBUS manual) |
| HR8808 | Spare | |
| HR8809 | Spare | |
| HR8810 | Spare | |
| HR8811 | Spare | |
| HR8812 | Spare | |
| HR8813 | Spare | |
| HR8814 | Spare | |
| HR8815 | Door jammed on opening | Verify the door opening |

***Note: The HR85-86-87 channels deactivate the R5 or ETSL relay.***